AMENDED CLAIMS
received by the International Bureau on 05 November 2012 (05.11.2012)

WHAT IS CLAIMED IS:

1. An apparatus for carrying cargo in an aircraft, said apparatus comprising:

a rack assembly mounted in an upper part of a fuselage of said aircraft so as to define a cargo area in an upper lobe thereof, said rack assembly comprising:

a plurality of transverse rack frames mounted at intervals to frames of said fuselage of said aircraft, said transverse rack frames each comprising:

a lower frame member that extends substantially horizontally to form a lower side of said cargo area; and

first and second suspension frame members that extend generally upwardly from said horizontal frame member towards pre-existing luggage bin attachment points on said frames of said fuselage from which said rack assembly is suspended;

means for supporting a plurality of cargo containers arranged longitudinally on said rack assembly within said cargo area in said upper lobe of said aircraft.

2-10 (canceled)

11. A lift apparatus for raising and lowering cargo containers between a main deck of an aircraft and a cargo area in an upper lobe of a fuselage of said aircraft, said lift apparatus comprising:

a lift platform for supporting cargo thereon;

a lift mechanism for selectively raising and lowering said lift platform between said main deck of said aircraft and said cargo area in said upper lobe of said fuselage; and

a transverse barrier structure in said fuselage having said lift mechanism mounted thereto so that loads exerted by said lift platform on said lift mechanism are supported by said barrier structure.

12. The lift apparatus of claim 11, wherein said lift mechanism comprises:

a generally vertically aligned ball screw assembly having said lift platform mounted to a traveling nut portion thereof.

13. The lift apparatus of claim 11, wherein said lift mechanism comprises:

a telescopic hydraulic cylinder having said lift platform mounted to an upper end portion thereof.

14. The lift apparatus of claim 11, wherein substantially an entirety of said lift mechanism is housed within said transverse barrier structure.

15. The lift apparatus of claim 11, further comprising:

at least one linear guide mounted to said transverse barrier structure that stabilizes said lift platform as said lift platform is raised and lowered by said lift mechanism.

16. The lift apparatus of claim 11, wherein said lift platform comprises:

a plurality of deck members that nest between longitudinally extending fixed cargo tracks on said main deck of said aircraft when said lift platform is in a lowered position, said deck segments being substantially level with said fixed cargo tracks when said lift platform is in said lowered position so that cargo is able to transition horizontally between said fixed rails and said lift platform of said lift apparatus.

17. The lift apparatus of claim 16, wherein said plurality of said deck segments of said lift platform comprise:

a plurality of substantially horizontal deck segments having cargo rollers mounted thereon.

18. The lift apparatus of claim 16, wherein said deck segments of said lift platform comprise:

a plurality of substantially horizontal tine members.

19. The lift apparatus of claim 11, wherein said transverse barrier structure comprises:

a protective barrier installed between a personnel area and a cargo area of said aircraft.

20. A cover apparatus for closing a cargo opening in a deck of an aircraft, said cover apparatus comprising:

a plurality of substantially horizontal plate members; and

guide mechanisms supporting longitudinal edges of said plate members from portions of seat tracks depending below said main deck so that said plate members are selectively extensible across said cargo opening.

21. The cover apparatus of claim 20, wherein said guide mechanisms comprise:

linear guides mounting said edges of said plate members to said depending portions of said seat tracks.

22. The cover apparatus of claim 20, wherein said plurality of plate members comprise:

first and second sets of said plate members that are selectively extensible from opposite edges of said opening so as to meet proximate a middle area thereof.

23. The cover apparatus of claim 22, further comprising:

cooperating channel and tongue members mounted on opposing distal endsof said first and second sets of plate members, that meet to form a tonguc-and-

groove engagement that supports extended ends of said plate members proximate said middle area of said opening.

24. An apparatus for carrying cargo in an aircraft, said apparatus comprising:

a rack assembly mounted in an upper part of a fuselage of said aircraft so as to define a cargo area in an upper lobe thereof, said rack assembly comprising:

a plurality of transverse rack frame mounted at intervals to frames of said fuselage of said aircraft, said transverse rack frames each comprising:

a lower frame member that extends substantially horizontally to form a lower side of said cargo area; and

first and second suspension frame members that extend generally upwardly from said horizontal frame member towards locations on said frames of said fuselage from which said rack assembly is suspended; and

at least one substantially horizontal panel member mounted to said lower frame members of said plurality of rack frames so as to form a shear panel for said rack assembly; and

means for supporting a plurality of cargo containers arranged longitudinally on said rack assembly within said cargo area in said upper lobe of said aircraft.

25. An apparatus for carrying cargo in an aircraft, said apparatus comprising:

a rack assembly mounted in an upper part of a fuselage of said aircraft so as to define a cargo area in an upper lobe thereof, said rack assembly comprising:

a plurality of transverse rack frames mounted at intervals to frames of said fuselage of said aircraft, said transverse rack frames each comprising:

a lower frame member that extends substantially horizontally to form a lower side of said cargo area;

first and second suspension frame members that extend generally upwardly from said horizontal frame member towards

locations on said frames of said fuselage from which said rack assembly is suspended; and

at least one pivotable link member interconnecting an upper end of each of said suspension frame members to one of said frames of said fuselage so as to support said suspension frame members therefrom; and

means for supporting a plurality of cargo containers arranged longitudinally on said rack assembly within said cargo area in said upper lobe of said aircraft.

26. The apparatus of claim 25, wherein said at least one pivotable link member comprises:

a pivotable link member aligned to transmit loads from said frame of said rack assembly to said frame of said fuselage in a generally radial direction.

27. The rack assembly of claim 26, wherein said frames of said rack assembly further comprise:

crossbeam members mounted to said upper ends of said suspension frame members and having upper and lower ends;

said upper and lower ends of said crossbeam members being attached by said pivotable link members to said frames of said fuselage.

28. An apparatus for carrying cargo in an aircraft, said apparatus comprising:

a rack assembly mounted in an upper part of a fuselage of said aircraft so as to define a cargo area in an upper lobe thereof, said rack assembly comprising:

a plurality of transverse rack frames mounted at intervals to frames of said fuselage of said aircraft, said transverse rack frames each comprising:

a lower frame member that extends substantially horizontally to form a lower side of said cargo area; and

first and second suspension frame members that extend generally upwardly from said horizontal frme member towards locations on said frames of said fuselage from which said rack assembly is suspended;

means for supporting a plurality of cargo containers arranged longitudinally on said rack assembly within said cargo area in said upper lobe of said aircraft; and

means for controlling deformation of said fuselage by said rack assembly.

29. The apparatus of claim 28, wherein said means for controlling deformation of said fuselage by said rack assembly comprises:

at least one rigid member mounted transversely across an upper end of said frame of said fuselage above said storage area of said rack assembly so as to hold said frame against bowing inwardly under loads exerted by said rack assembly; and

at least one tension member interconnecting each of said upwardly extending suspension frame members to said frame of said fuselage so as to hold said frame from bowing outwardly under loads exerted by said rack assembly.

30. The apparatus of claim 29, wherein said at least one rigid member mounted transversely across an upper end of said frame above said storage area of said rack assembly comprises:

at least one rigid spanner bar member.

31. The apparatus of claim 29, wherein said at least one tension member interconnecting each of said upwardly extending suspension beam members to said frame of said fuselage comprises:

at least one tension cable.

32. A lift apparatus for raising and lowering cargo containers between a main deck of an aircraft and a cargo area in an upper lobe of a fuselage of said aircraft, said lift apparatus comprising:

a lift platform for supporting cargo thereon; and

a lift mechanism for selectively raising and lowering said lift platform between said main deck of said aircraft and said cargo area in said upper lobe of said fuselage;

said lift platform comprising a plurality of deck segments that nest between longitudinally extending fixed cargo tracks on said main deck of said aircraft when said lift platform is in a lowered position, said deck segments being substantially level with said fixed cargo tracks when said lift platform is in said lowered position so that cargo is able to transition horizontally between said fixed rails and said lift platform so said lift apparatus.

33. The lift apparatus of claim 32, wherein said lift mechanism comprises:

a generally vertically aligned ball screw assembly having said lift platform mounted to a traveling nut portion thereof.

34. The lift apparatus of claim 32, wherein said lift mechanism comprises:

a telescopic hydraulic cylinder having said lift platform mounted to an upper end portion thereof.

35. The lift apparatus of claim 32, wherein said plurality of said deck segments of said lift platform comprise:

a plurality of substantially horizontal deck segments having cargo rollers mounted thereon.

36. The lift apparatus of claim 32, wherein said deck segments of said lift platform comprise:

a plurality of substantially horizontal tine members.

37. The apparatus of claim 32, further comprising:

a transverse barrier structure in said fuselage having said lift mechanism mounted thereto so that loads exerted by said lift platform on said lift mechanism are supported by said barrier structure.

38. The lift apparatus of claim 37, wherein substantially an entirety of said lift mechanism is housed within said transverse barrier structure.

39. The lift apparatus of claim 37, further comprising:

at least one linear guide mounted to said transverse barrier structure that stabilizes said lift platform as said lift platform is raised and lowered by said lift mechanism.

40. The lift apparatus of claim 37, wherein said transverse barrier structure comprises:

a protective barrier installed between a personnel area and a cargo area of said aircraft.

Claims:

1. An apparatus for carrying cargo into an aircraft, said apparatus comprising:
a rack assembly mounted in an upper part of a fuselage of said aircraft so as to define a cargo space in an upper lobe thereof, said rack assembly comprises:
a plurality of transverse rack frames mounted at intervals to frames of said fuselage of said aircraft; and
means for supporting a plurality of cargo containers arranged longitudinally on said rack assembly within said cargo area in said upper lobe of said aircraft, characterised in that said transverse rack frames each comprise:
a lower frame member that extends substantially horizontally to form a lower side of said cargo area; and
first and second suspension frame members that extend generally upwardly from said horizontal frame member towards locations on said frame of said fuselage from which said rack assembly is suspended.

2. The apparatus of claim 1, wherein said means for supporting said plurality of cargo containers on said rack assembly comprises:
at least one cargo rail extending generally longitudinally across a plurality of said lower frame members of a plurality of said rack frames.

3. The apparatus of claim 2, wherein said rack assembly further comprises:
means for supporting said upwardly extending suspension beams of said rack frames from pre-existing luggage bin attachment points on said frames of said fuselage.

4. The apparatus of claim 3, wherein said means for supporting said upwardly extending suspension beam members of said rack frames from said pre-existing luggage bin attachment points comprises:
at least one pivotable link member interconnecting an upper end of each of said suspension beam members to one of said pre-existing attachment points on said frame of said fuselage.

5. The apparatus of claim 4, wherein said at least one pivotable link member comprises:
a pivotable link member aligned to transmit loads from said frame of said rack assembly to said frame of said fuselage in a generally radial direction.

6. The rack assembly of claim 5, wherein said frames of said rack assembly further comprise:
crossbeam members mounted to said upper ends of said suspension beam members and having upper and lower ends;
said upper and lower ends of said crossbeam members being attached by said pivotable link members to said pre-existing attachment points on one of said frame members of said fuselage.

7. The apparatus of claim 4, further comprising: at least one rigid bar mounted transversely across an upper end of said frame of said fuselage above said storage area of said rack assembly to hold said frame against bowing inwardly under loads exerted by said rack assembly; and
at least one tension cable interconnecting each of said upwardly extending suspension beam members to said frame of said fuselage to hold said frame from bowing outwardly under loads exerted by said rack assembly.

8. The apparatus of claim 4, wherein said rack assembly extends substantially a full length of a main fuselage section of said aircraft.

9. The apparatus of claim 7, wherein the rigid bar comprises a rigid spanner bar.

10. The apparatus of claim 1, wherein the rack assembly further comprises at least one substantially horizontal panel member mounted to said lower frame members of said plurality of rack frames so as to form a shear panel for said rack assembly.