[0006]A retractable hinged arm includes: an elongate, substantially planar body formed of a filled thermoplastic material, the body, in a deployed mode, having major faces facing upward and downward, with one of the faces defining an elongate central concavity extending substantially the length of the body, opening away from the body, and the other face defining lateral concavities extending substantially the length of the body disposed on each side of the central concavity, wherein the body has a cross-section, taken along a datum extending transverse the length of the body, defining an inner "U" shaped portion, corresponding to the central concavity, the inner "U" shaped portion sandwiched between outer "U" shaped portions disposed on each side of the inner "U" shape, each of the outer "U" shaped portions corresponding to a respective lateral concavity, with the inner "U" shaped portion's vertical portions comprising vertical portions of respective outer "U" shaped portions; a hinge disposed at a proximal portion of body; and a detent disposed proximal the hinge, the detent being configured to arrest rotation of the body around the hinge; wherein, in the deployed mode, the body extends away from the hinge to support a weight at its distal portion.

[0007] A method of making a support arm includes: heating a mold to a glass transition temperature of a thermoplastic material; injecting the thermoplastic material comprising a filler into the mold and allowing the thermoplastic material to conform to the mold; cooling the mold to an ejection temperature to form the support arm; and ejecting the support arm from the mold; wherein a cross-section of the support arm taken along a line from an inner edge to an outer edge of the support arm comprises a first "U" shaped portion and a second "U" shaped portion.

[0008] A tray table assembly includes: a support arm comprising a material selected from metallic material, metallic alloy material, or a thermoplastic material, wherein a cross-section of the support arm taken along a line from an inner edge to an outer edge of the support arm comprises a first "U" shaped portion and a second "U" shaped portion joined by a connecting member; a tray table; wherein a perimeter of the support arm comprises a multiwall structure or wherein a perimeter of the tray table comprises a multiwall structure or wherein a perimeter of the support arm and a perimeter of the tray table comprises a multiwall structure.

[0009] The above described and other features are exemplified by the following figures and detailed description.

CLAIMS

1. A retractable hinged arm (20), comprising:

an elongate, substantially planar body (2) formed of a filled thermoplastic material, the body, in a deployed mode, having major faces facing upward and downward, with one of the faces defining an elongate central concavity (30) extending substantially the length of the body, opening away from the body, and the other face defining lateral concavities (26, 34) extending substantially the length of the body disposed on each side of the central concavity, wherein the body has a cross-section, taken along a datum extending transverse the length of the body, defining an inner "U" shaped portion (13), corresponding to the central concavity, the inner "U" shaped portion sandwiched between outer "U" shaped portions (12, 14) disposed on each side of the inner "U" shape, each of the outer "U" shaped portions corresponding to a respective lateral concavity, with the inner "U" shaped portion's vertical portions comprising vertical portions of respective outer "U" shaped portions;

a hinge (3) disposed at a proximal portion (4) of body; and

a detent (5) disposed proximal the hinge, the detent being configured to arrest rotation of the body around the hinge;

wherein, in the deployed mode, the body extends away from the hinge to support a weight at its distal portion (6).

2. The retractable hinged arm of Claim 1, wherein the filler comprises a fiber filler.

3. The retractable hinged arm of Claim 2, wherein the fiber filler comprises a glass fiber or a carbon fiber.

4. The retractable hinged arm of any of Claims 1 to 3, wherein one of the outer "U" shaped portion includes a leg (24) and a projection (28) having a first height, h_1, and wherein the other outer "U" shaped portion includes a jut (32) and a post (36) having a second height, h_2.

5. The retractable hinged arm of Claim 4, wherein the first height, h_1, is greater than the second height, h_2.

6. The retractable hinged arm of Claim 4, wherein the first height, h_1, is less than the second height, h_2.

7. The retractable hinged arm of Claim 4, wherein the first height, h_1, is equal to the second height, h_2.

8. The retractable hinged arm of any of Claims 1 to 7, wherein a thickness of the leg, projection, jut, and post is less than a thickness of the lateral concavities and central concavity.

9. The retractable hinged arm of any of Claims 1 to 8, wherein the leg, and/or lateral concavities, and/or projection, and/or central concavity, and/or jut, and/or post comprises a multiwall structure (40, 42, 44, 46).

10. The retractable hinged arm of Claim 9, wherein the multiwall structure comprises a first wall (50) and a second wall (54) with a rib (52) disposed between the first wall and the second wall.

11. The retractable hinged arm of any of Claims 1 to 10, wherein the multiwall structure is located along a perimeter (62) of the retractable hinged arm.

12. A tray table assembly (1), comprising:

a retractable hinged arm (20) according to any of the preceding claims; and;

a tray table (10) comprising an indented portion (16);

wherein the retractable hinged arm is placed in the indented portion of the tray table, such that the retractable hinged arm is flush with a bottom portion (18) of the tray table assembly.