CLAIMS:

1. A conveyor assembly (100) for use in a vapor deposition apparatus wherein a sublimated source material is deposited as a thin film on a photovoltaic (PV) module substrate (14), said assembly comprising:

a housing (104) defining an enclosed interior volume;

a conveyor (102) operably disposed within said housing to be driven in an endless loop path within said housing, said endless loop path having an upper leg that moves in a conveyance direction, and a lower leg that moves in an opposite return direction;

said housing further comprising a top member (110) defining an open deposition area (112) in said upper leg of said endless loop path; and,

said conveyor comprising a plurality of interconnected slats (130), each of said slats having a respective flat planar outer surface (132) and transverse edge profiles (135, 136) such that, in said upper leg of said endless loop path, said outer surfaces of said slats lie in a common horizontal plane and define an uninterrupted flat support surface for a substrate conveyed through said assembly, wherein the trailing transverse edge profile is slanted with respect to vertical and the leading transverse edge profile cooperates with the trailing edge profile so as to define a tortuous non-vertical path through the adjacent slats along said upper leg of said endless loop path, said interconnected slats are interconnected by link assemblies (140) at opposite longitudinal ends of said slats, said link assemblies having rollers (142) configured therewith, said rollers running along tracks (144) disposed within said housing at least along said upper leg of said endless loop path;

wherein said link assemblies (140) comprise inner and outer link plates (146, 148), said rollers (142) supported by an axle (150) between said inner and outer link plates, said axles further interconnecting inner and outer link plates of adjacent said slats, said link plates further comprising tabs (152) that engage through slots in said slats (130) to secure said slats to said link assemblies.

2. The conveyor assembly (100) as in claim 1, wherein said transverse edge profiles (135, 136) of said slats (130) define a tortuous non-vertical path to sublimated source material along said upper leg of said endless loop path.

3. The conveyor assembly (100) as in claim 1, wherein said housing (104) defines an entry slot (120) and an exit slot (122) for a substrate (14) conveyed through said assembly,

said slots defined by plate members (124) attached to said top member of said housing, said top member further defining a sealing surface (126) for engagement by a vapor deposition head (62) around said deposition area.

4. The conveyor assembly (100) as in claim 1, wherein said housing (104) comprises a plurality of wall members (106, 108) in a slotted, slip-fit engagement wherein tabs (114) on one said wall engage in slots (116) in an adjacent said wall, and further comprising removable pins (118) extending through said tabs to secure said slip-fit engagement.

5. A vapor deposition module (60) for deposition of a sublimated source material as a thin film on a photovoltaic (PV) module substrate (14) conveyed through said vapor deposition module, comprising:

a casing (95);

a vapor deposition head (62) operably configured within said casing to sublimate a source material;

a conveyor assembly (100) operably configured within said casing below said vapor deposition head, said conveyor assembly further comprising

a housing (104) defining an enclosed interior volume;

a conveyor (102) operably disposed within said housing to be driven in an endless loop path within said housing, said endless loop path having an upper leg that moves in a conveyance direction, and a lower leg that moves in an opposite return direction;

said housing further comprising a top member (110) defining an open deposition area (112) wherein said conveyor is exposed to said vapor deposition head as said conveyor moves in said upper leg of said endless loop path;

said conveyor comprising a plurality of interconnected slats (130), each of said slats having a respective flat planar outer surface (132) and transverse edge profiles (135, 136) such that, in said upper leg of said endless loop path, said outer surfaces of said slats lie in a common horizontal plane and define an uninterrupted flat support surface for a substrate conveyed through said module and wherein one of said transverse edge profiles is slanted with respect to vertical and said transverse edge profiles cooperate so as to define a tortuous non-vertical path through the adjacent slats in said upper leg of said endless loop path; and,

wherein said vapor deposition head is configured on said conveyor assembly housing such that sublimated source material from said vapor deposition head is directed to said open deposition area and onto an upper surface of a substrate supported by said conveyor.

6. The vapor deposition module (60) as in claim 5, wherein said conveyor assembly (100) housing is configured for drop-in placement in said casing (95), with said vapor deposition head (62) mounted above said conveyor assembly within said vapor deposition module.

7. The vapor deposition module (60) as in claim 5, wherein said slats (130) are interconnected by link assemblies (140) at opposite longitudinal ends of said slats, said link assemblies supporting rollers (142), said rollers running along tracks (144) disposed within said conveyor assembly housing at least along said upper leg of said endless loop path.

8. The vapor deposition module (60) as in claim 7, wherein said link assemblies (140) comprise inner and outer link plates (146, 148), said rollers (142) supported by an axle (150) between said inner and outer link plates, said axles further interconnecting adjacent inner and outer link plates, said link plates further comprising tabs (152) that engage through slots in said slats to secure said slats to said link assemblies, and clips (156) that attach to adjacent said axles.

CLAIMS

1. A conveyor assembly (100) for use in a vapor deposition apparatus wherein a sublimated source material is deposited as a thin film on a photovoltaic (PV) module substrate (14), said assembly comprising:

a housing (104) defining an enclosed interior volume;

a conveyor (102) operably disposed within said housing to be driven in an endless loop path within said housing, said endless loop path having an upper leg that moves in a conveyance direction, and a lower leg that moves in an opposite return direction;

said housing further comprising a top member (110) defining an open deposition area (112) in said upper leg of said endless loop path; and,

said conveyor comprising a plurality of interconnected slats (130), each of said slats having a respective flat planar outer surface (132) and transverse edge profiles (135, 136) such that, in said upper leg of said endless loop path, said outer surfaces of said slats lie in a common horizontal plane and define an uninterrupted flat support surface for a substrate conveyed through said assembly, wherein the trailing transverse edge profile is slanted with respect to vertical and the leading transverse edge profile cooperates with the trailing edge profile so as to define a tortuous non-vertical path through the adjacent slats along said upper leg of said endless loop path, said interconnected slats are interconnected by link assemblies (140) at opposite longitudinal ends of said slats, said link assemblies having rollers (142) configured therewith, said rollers running along tracks (144) disposed within said housing at least along said upper leg of said endless loop path;

wherein said link assemblies (140) comprise inner and outer link plates (146, 148), said rollers (142) supported by an axle (150) between said inner and outer link plates, said axles further interconnecting inner and outer link plates of adjacent said slats, said link plates further comprising tabs (152) that engage through slots in said slats (130) to secure said slats to said link assemblies.

2. (Currently Amended) The conveyor assembly (100) as in claim 1, wherein said transverse edge profiles (135, 136) of said slats (130) define a tortuous non-vertical path to inhibit sublimated source material along said upper leg of said endless loop path.

3. The conveyor assembly (100) as in claim 1, wherein said housing (104) defines an entry slot (120) and an exit slot (122) for a substrate (14) conveyed through said assembly, said slots defined by plate members (124) attached to said top member of said housing, said top member further defining a sealing surface (126) for engagement by a vapor deposition head (62) around said deposition area.

4. The conveyor assembly (100) as in claim 1, wherein said housing (104) comprises a plurality of wall members (106, 108) in a slotted, slip-fit engagement wherein tabs (114) on one said wall engage in slots (116) in an adjacent said wall, and further comprising removable pins (118) extending through said tabs to secure said slip-fit engagement.

5. (Currently Amended) A vapor deposition module (60) for deposition of a sublimated source material as a thin film on a photovoltaic (PV) module substrate (14) conveyed through said vapor deposition module, comprising:

a casing (95);

a vapor deposition head (62) operably configured within said casing to sublimate a source material;

a conveyor assembly (100) operably configured within said casing below said vapor deposition head, said conveyor assembly further comprising

a housing (104) defining an enclosed interior volume;

a conveyor (102) operably disposed within said housing to be driven in an endless loop path within said housing, said endless loop path having an upper leg that moves in a conveyance direction, and a lower leg that moves in an opposite return direction;

said housing further comprising a top member (110) defining an open deposition area (112) wherein said conveyor is exposed to said vapor deposition head as said conveyor moves in said upper leg of said endless loop path;

said conveyor comprising a plurality of interconnected slats (130), each of said slats having a respective flat planar outer surface (132) and transverse edge profiles (135, 136) such that, in said upper leg of said endless loop path, said outer surfaces of said slats lie in a common horizontal plane and define an uninterrupted flat support surface for a substrate

conveyed through said module and wherein one of said transverse edge profiles is slanted with respect to vertical and said transverse edge profiles cooperate so as to define a tortuous non-vertical path through the adjacent slats in said upper leg of said endless loop path, said interconnected slats interconnected by link assemblies (140) at opposite longitudinal ends of said slats, said link assemblies supporting rollers (142), said rollers running along tracks (144) disposed within said conveyor assembly housing at least along said upper leg of said endless loop path;

wherein said link assemblies (140) comprise inner and outer link plates (146, 148), said rollers (142) supported by an axle (150) between said inner and outer link plates, said axles further interconnecting adjacent inner and outer link plates, said link plates further comprising tabs (152) that engage through slots in said slats to secure said slats to said link assemblies, and clips (156) that attach to adjacent said axles; and,

wherein said vapor deposition head is mounted above said conveyor assembly housing such that sublimated source material from said vapor deposition head is directed to said open deposition area and onto an upper surface of a substrate supported by said conveyor.

6. The vapor deposition module (60) as in claim 5, wherein said conveyor assembly (100) housing is configured for drop-in placement in said casing (95), with said vapor deposition head (62) mounted above said conveyor assembly within said vapor deposition module.