CLAIMS:

1. A filter assembly for use in an electronic enclosure, the filter assembly comprising:

a media structure including an open front face, a closed rear face, and an internal recess between the open front face and closed rear face;

a scrim material forming at least a portion of the media structure; and

an electrostatic material disposed within the internal recess of the filter assembly, the electrostatic material at least partially covering the scrim.

2. The filter assembly of any of the previous claims, wherein the scrim material comprises a woven material.

3. The filter assembly of any of the previous claims, wherein the scrim material comprises a non-woven material.

4. The filter assembly of any of the previous claims, wherein the scrim material comprises polypropylene fibers.

5. The filter assembly of any of the previous claims, wherein the scrim material has a permeability of between about 100 ft./min. at 0.5 inches of water and about 800 ft./min. at 0.5 inches of water.

6. The filter assembly of any of the previous claims, wherein the electrostatic material comprises polypropylene fibers.

7. The filter assembly of any of the previous claims, wherein the electrostatic material comprises acrylic fibers.

8. The filter assembly of any of the previous claims, wherein the electrostatic material comprises a mixed fiber medium comprising polypropylene and acrylic.

9. The filter assembly of any of the previous claims, wherein the electrostatic material has a permeability of between about 250 ft./min. at 0.5 inches of water and about 750 ft./min. at 0.5 inches of water.

10. The filter assembly of any of the previous claims, wherein the electrostatic material has a filtering efficiency of about 20 % to about 99.99 % for 20 to 30 micron particulate contaminants.

11. The filter assembly of any of the previous claims, wherein the internal recess of the filter assembly has a ratio of maximum length to maximum diameter of the open front face of at least 1.0.

12. The filter assembly of any of the previous claims, wherein the internal recess of the filter assembly has a ratio of maximum length to maximum diameter of the open front face of at least 1.5.

13. The filter assembly of any of the previous claims, wherein the internal recess of the filter assembly has a ratio of maximum length to maximum diameter of the open front face of at least 2.0.

14. The filter assembly of any of the previous claims, wherein the internal recess of the filter assembly has an internal surface area that is at least 2 times the area at the open front face.

15. The filter assembly of any of the previous claims, wherein the internal recess of the filter assembly has an internal surface area that is at least 3 times the area at the open front face.

16. The filter assembly of any of the previous claims, wherein the internal recess of the filter assembly has an internal surface area that is at least 4 times the area at the open front face.

17. The filter assembly of any of the previous claims, wherein the internal recess of the filter assembly has an internal surface area that is at least 6 times the area at the open front face.

18. The filter assembly of any of the previous claims, wherein at least 50 percent of the surface area of the internal recess has an angle to the opening that is less than or equal to 45 degrees.

19. The filter assembly of any of the previous claims, wherein at least 75 percent of the surface area of the internal recess has an angle to the opening that is less than or equal to 45 degrees.

20. The filter assembly of any of the previous claims, wherein at least 50 percent of the surface area of the internal recess has an angle to the opening that is less than or equal to 30 degrees.

21. The filter assembly of any of the previous claims, wherein at least 75 percent of the surface area of the internal recess has an angle to the opening that is less than or equal to 30 degrees.

22. The filter assembly of any of the previous claims, wherein the filter assembly comprises a recirculation filter disposed within a housing of a disk drive, and the filter assembly is oriented to filter airflow induced by the rotation of one or more disks within the disk drive housing.

23. The filter assembly of any of the previous claims, wherein the filter assembly comprises a plurality of structures including an open front face, a closed rear face, and a plurality of internal recesses between the open front face and closed rear face.

24. A filter assembly for use in an electronic enclosure, the filter assembly comprising:

a media construction including an open front end, a closed rear end, and a plurality of internal recesses between the open front face and closed rear face;

a scrim material forming at least a portion of the internal recesses; and

an electrostatic material disposed within the internal recesses of the filter assembly, the electrostatic material at least partially covering the scrim.

25. The filter assembly of any of the previous claims, wherein the scrim material comprises woven material.

26. The filter assembly of any of the previous claims, wherein the scrim material comprises polypropylene fibers.

27. The filter assembly of any of the previous claims, wherein the scrim enclosure has a permeability of between about 100ft./min. at 0.5 inches of water and about 800ft./min. at 0.5 inches of water.

28. The filter assembly of any of the previous claims, wherein the electrostatic material comprises a mixture of polypropylene fibers and acrylic fibers.

29. The filter assembly of any of the previous claims, wherein the electrostatic material comprises a mixed fiber medium comprising polypropylene and acrylic.

30. The filter assembly of any of the previous claims, wherein the electrostatic material has a permeability of between about 250ft./min. at 0.5 inches of water and about 750ft./min. at 0.5 inches of water.

31. The filter assembly of any of the previous claims, wherein the electrostatic material has a filtering efficiency of about 20 % to about 99.99 % for 20 to 30 micron particulate contaminants.

32. The filter assembly of any of the previous claims, wherein at least one of the plurality of internal recesses has a ratio of maximum length to maximum diameter of the open front face of at least 1.0.

33. The filter assembly of any of the previous claims, wherein at least one of the plurality of internal recesses has a ratio of maximum length to maximum diameter of the open front face of at least 1.5.

34. The filter assembly of any of the previous claims, wherein at least one of the plurality of internal recesses has a ratio of maximum length to maximum diameter of the open front face of at least 2.0.

35. The filter assembly of any of the previous claims, wherein at least one of the plurality of internal recesses has an internal surface area that is at least 2 times the area at the open front face.

36. The filter assembly of any of the previous claims, wherein at least one of the plurality of internal recesses has an internal surface area that is at least 3 times the area at the open front face.

37. The filter assembly of any of the previous claims, wherein at least one of the plurality of internal recesses has an internal surface area that is at least 4 times the area at the open front face.

38. The filter assembly of any of the previous claims, wherein at least one of the plurality of internal recesses has an internal surface area that is at least 6 times the area at the open front face.

39. The filter assembly of any of the previous claims, wherein at least 50 percent of the surface area of at least one internal recess has an angle to the opening that is less than or equal to 45 degrees.

40. The filter assembly of any of the previous claims, wherein at least 75 percent of the surface area of at least one internal recess has an angle to the opening that is less than or equal to 45 degrees.

41. The filter assembly of any of the previous claims, wherein at least 50 percent of the surface area of at least one internal recess has an angle to the opening that is less than or equal to 30 degrees.

42. The filter assembly of any of the previous claims, wherein at least 75 percent of the surface area of at least one internal recess has an angle to the opening that is less than or equal to 30 degrees.

43. The filter assembly of any of the previous claims, wherein the filter assembly comprises a recirculation filter disposed within a housing of a disk drive, and the filter

assembly is oriented to filter airflow induced by the rotation of one or more disks within the disk drive housing.

44. A filter assembly for use in an electronic enclosure, the filter assembly comprising:

a media structure including an open front face, a closed rear face, and an internal recess between the open front face and closed rear face; and

a permeable filter media forming at least a portion of the media structure;

wherein the internal recess of the filter assembly has a ratio of maximum length to maximum diameter of the open front face of at least 1.0.

45. A filter assembly for use in an electronic enclosure, the filter assembly comprising;

An upper sheet containing a scrim layer and a media layer;

a lower sheet containing a scrim layer and media layer;

a cavity defined by the sheets; and

an adsorbent material positioned within the cavity.

46. The filter assembly of claim 45, wherein the upper sheet is substantially flat and the lower sheet forms the cavity between the sheets.

47. The filter assembly of claim 45, wherein the upper sheet is substantially flat and the lower sheet is substantially concave.

46. The filter assembly for use in an electronic enclosure of any of the previous claims, wherein the permeable filter media has a permeability of between about 100ft./min. at 0.5 inches of water and about 800ft./min. at 0.5 inches of water.

47. The filter assembly for use in an electronic enclosure of any of the previous claims, wherein the electrostatic material comprises a mixture of polypropylene fibers and acrylic fibers.

48. The filter assembly for use in an electronic enclosure of any of the previous claims, wherein the internal recess of the filter assembly has a ratio of maximum length to maximum diameter of the open front face of at least 1.5.

49. The filter assembly for use in an electronic enclosure of any of the previous claims, wherein the internal recess of the filter assembly has a ratio of maximum length to maximum diameter of the open front face of at least 2.0.

50. The filter assembly for use in an electronic enclosure of any of the previous claims, wherein the internal recess of the filter assembly has an internal surface area that is at least 2 times the area at the open front face.

51. The filter assembly for use in an electronic enclosure of any of the previous claims, wherein the internal recess of the filter assembly has an internal surface area that is at least 6 times the area at the open front face.

52. The filter assembly for use in an electronic enclosure of any of the previous claims, wherein at least 50 percent of the surface area of the internal recess has an angle to the opening that is less than or equal to 45 degrees.

53. The filter assembly for use in an electronic enclosure of any of the previous claims, wherein at least 50 percent of the surface area of the internal recess has an angle to the opening that is less than or equal to 30 degrees.

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CLAIMS:

1. A filter assembly for use in an electronic enclosure, the filter assembly comprising:

a media structure defining an open front face, a closed rear face, and an internal recess between the open front face and closed rear face;

a scrim material forming at least a portion of the media structure; and

an electrostatic material disposed within the internal recess of the filter assembly, the electrostatic material at least partially covering the scrim within the internal recess;

carbon beads disposed within the internal recess; and

a substantially flat sheet of filter media coupled to the media structure at a weld area to define a cavity between the media and the substantially flat sheet of filter media.

2. The filter assembly of claim 1, wherein the scrim material comprises a woven material.

3. The filter assembly of claim 1, wherein the scrim material comprises a non-woven material.

4. The filter assembly of claim 1, wherein the scrim material comprises polypropylene fibers.

5. The filter assembly of claim 1, wherein the scrim material has a permeability of between about 100 ft./min. at 0.5 inches of water and about 800 ft./min. at 0.5 inches of water.

6. The filter assembly of claim 1, wherein the electrostatic material comprises polypropylene fibers.

7. The filter assembly of claim 1, wherein the electrostatic material comprises acrylic fibers.

8. The filter assembly of claim 1, wherein the electrostatic material comprises a mixed fiber medium comprising polypropylene and acrylic.

9. The filter assembly of claim 1, wherein the electrostatic material has a permeability of between about 250 ft./min. at 0.5 inches of water and about 750 ft./min. at 0.5 inches of water.

10. The filter assembly of claim 1, wherein the electrostatic material has a filtering efficiency of about 20 % to about 99.99 % for 20 to 30 micron particulate contaminants.

11. The filter assembly of claim 1, wherein the internal recess of the filter assembly has an internal surface area that is at least 2 times the area at the open front face.

12. The filter assembly of claim 1, wherein the internal recess of the filter assembly has an internal surface area that is at least 3 times the area at the open front face.

13. The filter assembly of claim 1, wherein the filter assembly comprises a recirculation filter disposed within a housing of a disk drive, and the filter assembly is oriented to filter airflow induced by the rotation of one or more disks within the disk drive housing.

14. A filter assembly for use in an electronic enclosure, the filter assembly comprising;

a first sheet containing a scrim layer and a media layer, wherein the first sheet is substantially flat and the media layer comprises electrostatic material;

a second sheet containing a scrim layer and media layer, wherein the second sheet is substantially concave;

a cavity defined by the first sheet and the second sheet; and

an adsorbent material positioned within the cavity, wherein the adsorbent material comprises carbon beads.

15. The filter assembly of claim 14, wherein the permeable filter media has a permeability of between about 100ft./min. at 0.5 inches of water and about 800ft./min. at 0.5 inches of water.

16. The filter assembly of claim 14, wherein the electrostatic material comprises a mixture of polypropylene fibers and acrylic fibers.

17. The filter assembly for use in an electronic enclosure of claim 14, wherein the internal recess of the filter assembly has an internal surface area that is at least 2 times the area at the open front face.

18. The filter assembly for us in an electronic enclosure of Claim 14, wherein the second sheet substantially retains its shape.

19. The filter assembly for us in an electronic enclosure of Claim 14, wherein the first sheet and the second sheet define a weld area around the border of the filter assembly, wherein the first sheet is coupled to the second sheet in the weld area.