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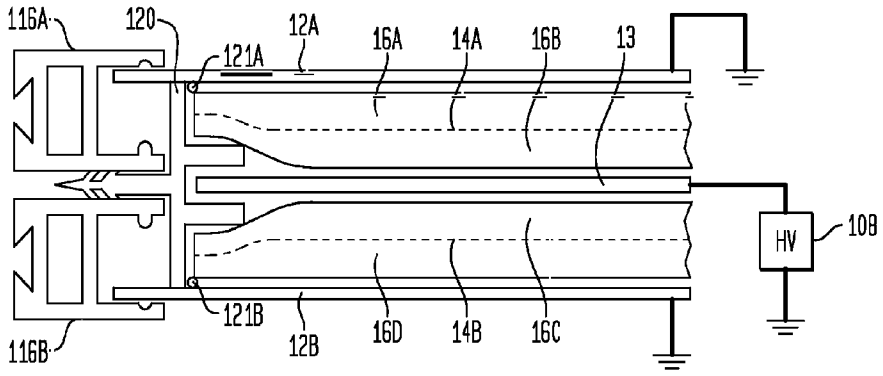
(54) Title: IMPROVED HLTER MEDIA FOR ACTIVE FIELD POLARIZED MEDIA AIR CLEANER



(57) Abstract: Filter media for an active field polarized media air cleaners includes two layers of dielectric material with a higher resistance air permeable screen sandwiched between the lower resistivity electric layers. The filter media may further include a mixed fiber filter layer having fibers from different sides of the triboelectric scale. The filter media may further include a layer of relatively higher density dielectric material followed by a layer of relatively lower density dielectric material.

WO 2007/076552 A3

AMENDED CLAIMS

received by the International Bureau on 06 November 2007 (06.11.2007)
original claim 1 amended; new claims 4 to 42 added; remaining claims unchanged

1. A filter media for an active field polarized media air cleaner comprising:

a first pad of filter material;

a second pad of filter material; and

an air permeable screen disposed between said first pad of filter material and said second pad of filter material, the resistivity of said air permeable screen being greater than the resistivity of said first pad of filter material and greater than the resistivity of said second pad of filter material.

2. A filter media in accordance with claim 1, wherein said first pad of filter material and said second pad of filter material is fibrous polyester.

3. A filter media in accordance with claim 1, wherein said air permeable screen is a fiberglass screen.

4. An active field polarized media air cleaner comprising:

a first conductive outer screen;

a second conductive screen substantially parallel to said first conductive outer screen;

a pad of mixed triboelectric material comprising fibers from different parts of the triboelectric scale; said pad of mixed triboelectric material being disposed between said first conductive outer screen and said second conductive screen; and

a high-voltage power supply having first and second terminals, said first terminal of said high voltage power supply being connected to said second conductive screen, said second terminal of said high-voltage power supply being coupled to said first conductive outer screen.

5. An active field polarized media air cleaner in accordance with claim 4, wherein said pad of mixed triboelectric material comprises a first layer of fibers from one part of the triboelectric scale, and a second layer fibers from a different part of the triboelectric scale.

6. An active field polarized media air cleaner in accordance with claim 4, wherein said pad of mixed triboelectric material comprises a blend of first and second fibers, said first fibers being from one part of the triboelectric scale and said second fiber being from a different part of the triboelectric scale.

7. An active field polarized media air cleaner comprising:

a first conductive outer screen;

a second conductive screen substantially parallel to said first conductive outer screen;

a pad of mixed triboelectric material comprising fibers from different parts of the triboelectric scale; said pad of mixed triboelectric material being disposed adjacent to said second conductive screen;

a first filter media being disposed between said first conductive outer screen and said mixed triboelectric media layer; and

a high-voltage power supply having first and second terminals, said first terminal of said high voltage power supply being connected to said second conductive screen, said second terminal of said high-voltage power supply being coupled to said first conductive outer screen.

8. An active field polarized media air cleaner in accordance with claim 7, wherein said first filter media further comprises a first pad of filter material; wherein said first pad of filter material is fibrous polyester.

9. An active field polarized media air cleaner in accordance with claim 7 wherein said first filter media further comprises:

a first pad of filter material;

a second pad of filter material; and

an air permeable screen disposed between said first pad of filter material and said second pad of filter material, the resistivity of said air permeable screen being greater than the resistivity of said first pad of filter material and greater than the resistivity of said second pad of filter material.

10. An active field polarized media air cleaner in accordance with claim 9, wherein said first pad of filter material and said second pad of filter material is fibrous polyester.

11. An active field polarized media air cleaner in accordance with claim 9, wherein said air permeable screen is a fiberglass screen.

12. A filter media for an active field polarized media air cleaner comprising:

a first pad of filter material;

a second pad of filter material;

an air permeable screen disposed between said first pad of filter material and said second pad of filter material, the resistivity of said air permeable screen being greater than the resistivity of said first pad of filter material and greater than the resistivity of said second pad of filter material; and

a pad of mixed triboelectric material comprising fibers from different parts of the triboelectric scale; said pad of mixed triboelectric material being disposed adjacent to said second pad of filter material.

13. A filter media in accordance with claim 12, wherein said first pad of filter material and said second pad of filter material is fibrous polyester.

14. A filter media in accordance with claim 12, wherein said air permeable screen is a fiberglass screen.

15. A filter media in accordance with claim 12, wherein said pad of mixed triboelectric material comprises a first layer of fibers from one part of the triboelectric scale, and a second layer fibers from a different part of the triboelectric scale.

16. A filter media in accordance with claim 12, wherein said pad of mixed triboelectric material comprises a blend of first and second fibers, said first fibers being from one part of the triboelectric scale and said second fiber being from a different part of the triboelectric scale.

17. A filter media for an active field polarized media air cleaner comprising:

a first pad of filter material;

a pad of mixed triboelectric material comprising fibers from different parts of the triboelectric scale; said pad of mixed triboelectric material being disposed adjacent to said first pad of filter material; and

a second pad of filter material disposed adjacent to said pad of mixed triboelectric material, wherein said second pad of filter material is less dense than said pad of mixed triboelectric material.

18. A filter media for an active field polarized media air cleaner in accordance with claim 17, wherein said second pad of filter material is fibrous polyester.

19. A filter media for an active field polarized media air cleaner comprising:

a first pad of filter material;

a second pad of filter material;

an air permeable screen disposed between said first pad of filter material and said second pad of filter material, the resistivity of said air permeable screen being greater than the resistivity of said first pad of filter material and greater than the resistivity of said second pad of filter material;

a pad of mixed triboelectric material comprising fibers from different parts of the triboelectric scale; said pad of mixed triboelectric material being disposed adjacent to said second pad of filter material; and

a third pad of filter material disposed adjacent to said pad of mixed triboelectric material, wherein said third pad of filter material is less dense than said pad of mixed triboelectric material.

20. A filter media in accordance with claim 19, wherein said first pad of filter material and said second pad of filter material is fibrous polyester.

21. A filter media in accordance with claim 19, wherein said air permeable screen is a fiberglass screen.

22. A filter media in accordance with claim 19, wherein said pad of mixed triboelectric material comprises a first layer of fibers from one part of the triboelectric scale, and a second layer fibers from a different part of the triboelectric scale.

23. A filter media in accordance with claim 19, wherein said pad of mixed triboelectric material comprises a blend of first and second fibers, said first fibers being from one part of the triboelectric scale and said second fiber being from a different part of the triboelectric scale.

24. A filter media for an active field polarized media air cleaner in accordance with claim 19, wherein said third pad of filter material is fibrous polyester.

25. A filter media for an active field polarized media air cleaner comprising:

a first pad of filter material;

a second pad of filter material;

an first air permeable screen disposed between said first pad of filter material and said second pad of filter material, the resistivity of said first air permeable screen being greater than the resistivity of said first pad of filter material and greater than the resistivity of said second pad of filter material;

a conductive center screen disposed adjacent to said second pad of filter material;

a third pad of filter material disposed adjacent to said conductive center screen;

a fourth pad of filter material;

a second air permeable screen disposed between said third pad of filter material and said fourth pad of filter material, the resistivity of said second air permeable screen being greater than the resistivity of said third pad of filter material and greater than the resistivity of said fourth pad of filter material;

a pad of mixed triboelectric material comprising fibers from different parts of the triboelectric scale; said pad of mixed triboelectric material being disposed adjacent to said fourth pad of filter material; and

a fifth pad of filter material disposed adjacent to said pad of mixed triboelectric material, wherein said fifth pad of filter material is less dense than said pad of mixed triboelectric material.

26. A filter media in accordance with claim 25, wherein said first pad of filter material and said second pad of filter material is fibrous polyester.

27. A filter media in accordance with claim 25, wherein said first air permeable screen is a fiberglass screen.

28. A filter media in accordance with claim 25, wherein said third pad of filter material and said fourth pad of filter material is fibrous polyester.

29. A filter media in accordance with claim 25, wherein said second air permeable screen is a fiberglass screen.

30. A filter media in accordance with claim 25, wherein said pad of mixed triboelectric material comprises a first layer of fibers from one part of the triboelectric scale, and a second layer fibers from a different part of the triboelectric scale.

31. A filter media in accordance with claim 25, wherein said pad of mixed triboelectric material comprises a blend of first and second fibers, said first fibers being from one part of the triboelectric scale and said second fiber being from a different part of the triboelectric scale.

32. A filter media for an active field polarized media air cleaner in accordance with claim 25, wherein said fifth pad of filter material is fibrous polyester.

33. A filter media for an active field polarized media air cleaner comprising:

a first pad of filter material;

a second pad of filter material;

an first air permeable screen disposed between said first pad of filter material and said second pad of filter material, the resistivity of said first air permeable screen being greater than the resistivity of said first pad of filter material and greater than the resistivity of said second pad of filter material;

a first pad of mixed triboelectric material comprising fibers from different parts of the triboelectric scale; said first pad of mixed triboelectric material being disposed adjacent to said second pad of filter material;

a conductive center screen disposed adjacent to said first pad of mixed triboelectric material;

a third pad of filter material disposed adjacent to said conductive center screen;

a fourth pad of filter material;

a second air permeable screen disposed between said third pad of filter material and said fourth pad of filter material, the resistivity of said second air permeable screen being greater than the resistivity of said third pad of filter material and greater than the resistivity of said fourth pad of filter material;

a second pad of mixed triboelectric material comprising fibers from different parts of the triboelectric scale; said second pad of mixed triboelectric material being disposed adjacent to said fourth pad of filter material; and

a fifth pad of filter material disposed adjacent to said second pad of mixed triboelectric material, wherein said fifth pad of filter material is less dense than said second pad of mixed triboelectric material.

34. A filter media in accordance with claim 33, wherein said first pad of filter material and said second pad of filter material is fibrous polyester.

35. A filter media in accordance with claim 33, wherein said first air permeable screen is a fiberglass screen.

36. A filter media in accordance with claim 33, wherein said first pad of filter material and said second pad of filter material is fibrous polyester.

37. A filter media in accordance with claim 33, wherein said second air permeable screen is a fiberglass screen.

38. A filter media in accordance with claim 33, wherein said first pad of mixed triboelectric material comprises a first layer of fibers from one part of the triboelectric scale, and a second layer fibers from a different part of the triboelectric scale.

39. A filter media in accordance with claim 33, wherein said first pad of mixed triboelectric material comprises a blend of first and second fibers, said first fibers being from one part of the triboelectric scale and said second fiber being from a different part of the triboelectric scale.

40. A filter media in accordance with claim 33, wherein said second pad of mixed triboelectric material comprises a first layer of fibers from one part of the triboelectric scale, and a second layer fibers from a different part of the triboelectric scale.

41. A filter media in accordance with claim 33, wherein said second pad of mixed triboelectric material comprises a blend of first and second fibers, said first fibers being

from one part of the triboelectric scale and said second fiber being from a different part of the triboelectric scale.

42. A filter media for an active field polarized media air cleaner in accordance with claim 33, wherein said fifth pad of filter material is fibrous polyester.