CLAIMS:

1. A filter device for filtering liquid by passing it through one or more filtering media, the filter device comprising a cartridge defining a treatment region filled with said one or more filtering media; a liquid inlet; a liquid outlet; and a locking mechanism located within a liquid flow through the cartridge and configured to lock at least one of the liquid inlet and the liquid outlet upon expiration of life time of said at least one filtering medium,

wherein said locking mechanism comprises

an erodible member formed by a composition selected to be erodible in response to exposure to the liquid and thereby reduce its volume; and

a mechanical assembly comprising a blocking member, a connector and an erodible member; the blocking member having an unlocking and a locking position and shiftable between the two positions, said mechanical assembly being biased to the locking position and held in the unlocking position by the connector; the connector being coupled at its one end to said erodible member and at its opposite end is engaged with a blocking member, such that a volume reduction of said erodible member drags said connector away from said blocking member until disengaging from the blocking member thus releasing the blocking member into the locking position.

2. A filter device according to claim 1, wherein the shifting between the two positions occurs upon reduction of volume of the erodible member beyond a threshold value.

3. A filter device according to claim 1 or 2, wherein said blocking member is displaceable from its unlocking position in which it is disengaged from the outlet into its locking position in which it engages the outlet and thereby blocks the liquid path through the cartridge.

4. A filter device according to any one of claims 1 to 3, wherein said mechanical assembly comprises a spring member associated with said connector so as to bias it to displace during the reduction of volume of the erodible member.

5. A filter device according to any one of claims 1 to 4, wherein said mechanical assembly is associated with the liquid inlet and comprises at least two plates arranged in a parallel relation one above the other, each having a plurality of perforations or

membrane regions for the liquid passage therethrough, an arrangement of said plates being shiftable between their normally open unlocking position, in which they are positioned with respect to one another to allow the liquid to flow into the cartridge and their closed locking position in which they are positioned to block the liquid flow into the cartridge.

6. A filter device according to claim 5, wherein when in the open position of the arrangement of plates, the plates are spaced from one another allowing the liquid to flow through said space between the plates, and when in the closed position of the arrangement the plates are in contact with one another and oriented with a misalignment between their perforations or membrane regions.

7. A filter device according to claim 6, wherein a first one of the plates is held by the connector in a position corresponding to said normally open position of the plates, in which the plate is spaced from the second plate, said connector being coupled to said erodible member, such that during the volume reduction of said composition said first plate moves towards a position of contact with said second plate resulting in the closed locking position of the plates.

8. A filter device according to claim 5, wherein when in the open position of the arrangement of plates, the plates are in contact with one another and positioned with alignment between their perforations or membrane regions, and when in the closed position of the arrangement the plates are in contact with one another and oriented with a misalignment between their perforations or membrane regions.

9. A filter according to claim 8, wherein said connector is associated with a spring member.

10. A filter device according to claim 8, wherein the plates are arranged in contact with one another, and at least one of the plates is rotatable with respect to at least one other plate, rotation of said at least one plate bringing the plates from the normally open position corresponding to the alignment between their perforations or membrane regions, into the closed locking position in which their perforations or membrane regions are in misalignment, at least one of the plates being coupled to said erodible member such that said rotation is caused by the reduction of volume of said composition.

11. A filter device according to claim 10, wherein said connector is a spring member.

12. A filter device according to any one of claims 1 to 11, wherein the blocking member is downwardly biased and the connector is upwardly biased by respective springs.

13. A filter device according to claim 12, wherein the blocking member is blocked from downward displacement by bearings associated with a tubular structure, said bearings being blocked from lateral movement by a rod of the connector.

14. A filter device according to claim 13, wherein the change of volume of the erodible member causes upward displacement of the connector by the spring up to a point where the rod of the connector moves out of a space in between the bearings allowing the lateral movement of the bearings thus permitting downwardly movement of the blocking member.

15. A filter device according to claim 14, wherein the blocking member carries at its distal end a flexible diaphragm allowing a sealing engagement with a nozzle of said outlet.

16. A filter device according to any one of claims 1 to 15, comprising an indicator responsive to a condition of the locking mechanism and generating output data for presentation to a user.

17. A filter device for filtering a liquid portion by passing it through at least one filtering medium, the filter device comprising at least one cartridge comprising a treatment region filled with the at least one filtering medium, an inlet for liquid ingress into said treatment region, and a liquid outlet, the cartridge comprising a first array of walls arranged in said treatment region in a spaced-apart relationship in a liquid flow path from the inlet towards the outlet, defining an array of vessel-like spaces in between said walls for the liquid successively flowing through said vessel-like spaces into a tubular vessel at the liquid outlet, the dimensions of said tubular vessel being selected to create an effect of communicating vessels within said array of vessel-like spaces, to thereby maintain at least a part of said at least one filtering medium in liquid environment.

18. A filter device according to claim 17, wherein said first array of walls comprises walls having closed-loop geometry and being concentrically arranged.

19. A filter device according to claim 18, wherein said tubular vessel is located at a center of the concentric arrangement.

20. A filter device according to any one of claims 17 to 19, wherein the walls of said first array are arranged such as to define alternating upward and downward flows of the liquid through each two adjacent vessel-like spaces.

21. A filter device according to any one of claims 17 to 20, comprising a liquid pretreatment region accommodated in a liquid flow path towards said inlet.

22. A filter device according to claim 21, wherein said pretreatment region is formed within at least a part of an inner region of a cover unit of said cartridge.

23. A filter device according to any one of claims 19 to 22, wherein the cartridge comprises at least two compartments within said treatment region, said compartments being arranged successively along the liquid flow path and containing at least two different types of filtering media, respectively, the successive compartments being coupled to one another in a manner allowing the liquid passage between them while substantially preventing mixing of the different filtering media.

24. A filter device according to claim 23, wherein said compartments are formed by said first array of walls and a second array of walls, which are tilted with respect to the walls of the first array, the walls of the second array being formed with a plurality of perforations or membrane regions.

25. A filter device according to any one of claims 17 to 24, wherein said at least one filtering medium is selected from a carbonaceous material, chitosan, ion exchanger, metal oxide, and metal hydroxide.

26. A filter device according to any one of claims 17 to 25, comprising a locking mechanism located within the liquid flow path through the cartridge and configured to block at least one of the liquid inlet and the liquid outlet upon expiration of life time of said at least one filtering medium.

27. A filter device according to claim 26, wherein said locking mechanism comprises:

an erodible member formed by a composition selected to be erodible in response to interaction with the liquid to thereby reduce its volume; and

a mechanical assembly coupled to said erodible member and shiftable from its unlocking positions into its locking position, a shift being driven by a reduction in the volume of said erodible member, such that said mechanical assembly when shifted into its locking position blocks at least one of the liquid inlet and outlet.

28. A filter device according to claim 27, wherein said unlocking positions of the mechanical assembly correspond to the volumes of said erodible member above a certain threshold value, and the locking position of said mechanical assembly corresponds to the volume substantially equal to said threshold value.

29. A filter device according to claim 27 or 28, wherein said mechanical assembly comprises a blocking member displaceable along said tubular vessel from its unlocking position being disengaged with said outlet into its locking position in which it engages with said outlet and thereby blocks the liquid path away from the cartridge.

30. A filter device according to claim 29, wherein said mechanical assembly comprises a connector which at its one end is attached to said erodible member and at its opposite end is engaged with said blocking member, such that said volume reduction of said erodible member drags said connector away from said blocking member until disengaging from the blocking member thus releasing the blocking member into its unlocking position.

31. A filter device according to claim 30, wherein said mechanical assembly comprises a spring member associated with said connector to control its movement during the reduction of volume of the erodible member.

32. A filter device according to claim31, wherein said mechanical assembly is associated with the liquid inlet and comprises at least two plates arranged in a parallel relation one above the other, each having a plurality if perforations or membrane regions for the liquid passage therethrough, an arrangement of said plates being shiftable between their normally open positions, in which they are positioned with respect to one another to allow the liquid to flow into the cartridge, and their closed position in which they are positioned to block the liquid flow into the cartridge.

33. A filter device according to claim 32, wherein when in the open position of the arrangement of plates, the plates are spaced from one another allowing the liquid

to flow through said space between the plates, and when in the closed position of the arrangement the plates are in contact with one another and oriented with a misalignment between their perforations or membrane regions.

34. A filter device according to claim 32 or 33, wherein when in the open position of the arrangement of plates, the plates are in contact with one another and positioned with alignment between their perforations or membrane regions, and when in the closed position of the arrangement the plates are in contact with one another and oriented with a misalignment between their perforations or membrane regions.

35. A filter device according to claim 34 wherein a one of the plates is held by the connector in a position corresponding to said normally open unlocking position of the plates, in which the plate is spaced from the second plate, such that during the volume reduction of the erodible member said plate moves towards a position of contact with the other plate, resulting in the closed locking position of the plates.

36. A filter device according to claim 35, wherein said connector is associated with a spring member.

37. A filter device according to claim 34, wherein the plates are arranged in contact with one another, and at least one of the plates is rotatable with respect to at least one other plate, rotation of said at least one plate bringing the plates from the normally open position corresponding to the alignment between their perforations or membrane regions, into the closed locking position in which their perforations or membrane regions are in misalignment, at least one of the plates being coupled to said erodible member by the connector, such that said rotation is caused by the reduction of volume of said composition.

38. A filter device according to any one of claims 27 to 37, wherein the blocking member is downwardly biased and the connector is upwardly biased by respective springs.

39. A filter device according to claim 38, wherein the blocking member is blocked from downwardly displacement by bearings associated with a tubular structure stationary included in the cartridge, said bearing being blocked from lateral movement by a rod of the connector.

40. A filter device according to claim 39, wherein the change of volume of the erodible member causes upward displacement of the connector by the spring up to a point where the rod of the connector moves out of a space in between the bearings allowing the lateral movement of the bearings thus permitting downwardly movement of the blocking member.

41. A filter device according to claim 40, wherein the blocking member carries at its distal end a flexible diaphragm allowing a sealing engagement with a nozzle of said outlet.

42. A filter device according to any one of claims 17 to 41, comprising an indicator responsive to a condition of the locking mechanism and generating output data for presentations to a user.

CLAIMS:

1. A filter device (10) for filtering liquid by passing it through one or more filtering media, the filter device comprising a cartridge (11) defining a treatment region (12) filled with said one or more filtering media; a liquid inlet (14); a liquid outlet (16); and a locking mechanism (40) located within a liquid flow through the cartridge and configured to lock at least one of the liquid inlet and the liquid outlet upon expiration of life time of said at least one filtering medium, wherein said locking mechanism comprises

- an erodible member (42) being formed of a composition selected to be erodible in response to exposure to the liquid and thereby reduce its volume; and.

- a mechanical assembly (44) comprising a blocking member (46) and a connector (48), the mechanical assembly having an unlocking and a locking position and shiftable between the two positions;

the connector being coupled at its one end (48A) to said erodible member and at its opposite end (48B) is engaged with the blocking member, such that a volume reduction of said erodible member drags said connector away from said blocking member until disengaging from the blocking member thus releasing the blocking member to thereby block the liquid flow through the cartridge.

2. A filter device according to Claim 1, wherein said unlocking position corresponds to the volume of the composition above a threshold value, and said locking position corresponds to a volume substantially equal to said threshold value.

3. A filter device according to Claim 1 or 2, wherein said blocking member is displaceable from its unlocking position in which it is disengaged from the

outlet into its locking position in which it engages with the outlet and thereby blocks the liquid path through the cartridge.

4. A filter device according to Claim 3, wherein said mechanical assembly comprises a spring member (52) associated with said connector so as to bias it to displace during the reduction of volume of the erodible member.

5. A filter device according to any one of claims 1 to 4, wherein said mechanical assembly is associated with the liquid inlet and comprises at least two plates (56) arranged in a parallel relation one above the other, each having a plurality of perforations or membrane regions (58) for the liquid passage therethrough, an arrangement of said plates being shiftable between their normally open unlocking position, in which they are positioned with respect to one another to allow the liquid to flow into the cartridge, and their closed locking position in which they are positioned to block the liquid flow into the cartridge.

6. A filter device according to Claim 5, wherein when in the open position of the arrangement of plates, the plates are spaced from one another allowing the liquid to flow through said space between the plates, and when in the closed position of the arrangement the plates are in contact with one another and oriented with a misalignment between their perforations or membrane regions.

7. A filter device according to Claim 6, wherein a first one of the plates is held by the connector in a position corresponding to said normally open position of the plates, in which the plate is spaced from the second plate, said connector being coupled to said erodible member, such that during the volume reduction of said composition said first plate moves towards a position of contact with said second plate resulting in the closed locking position of the plates.

8. A filter device according to claim 5, wherein when in the open position of the arrangement of plates, the plates are in contact with one another and positioned with alignment between their perforations or membrane regions, and when in the closed position of the arrangement the plates are in contact with one another and oriented with a misalignment between their perforations or membrane regions.

9. A filter device according to Claim 8, wherein said connector is associated with a spring member (52).

10. A filter device according to Claim 8, wherein the plates are arranged in contact with one another, and at least one of the plates is rotatable with respect to at least one other plate, rotation of said at least one plate bringing the plates from the normally open position corresponding to the alignment between their perforations or membrane regions, into the closed locking position in which their perforations or membrane regions are in misalignment, at least one of the plates being coupled to said erodible member such that said rotation is caused by the reduction of volume of said composition.

11. A filter device according to Claim 1, wherein the mechanical assembly comprises a spring-like member (52) associated with the connector to control its movement during the reduction of volume of the erodible composition.

12. A filter device according to Claim 11, wherein the blocking member carries at its distal end a flexible diaphragm allowing a sealing engagement with a nozzle of said outlet.

13. A filter device according to any one of Claims 1 to 12, comprising an indicator (70) responsive to a condition of the locking mechanism and generating output data for presentation to a user.