CLAIMS:

1. A hand–held applicator for targeted self-administration of a semi-solid medicament directly to the scalp and to other body areas, the applicator comprising:

an applicator head comprising an elongate dispensing nozzle for contacting areas of the scalp and other body areas;

an applicator body for housing a medicament reservoir;

a pump assembly comprising a pump chamber having an inlet for receiving medicament from the medicament reservoir and an outlet for discharging medicament to the dispensing nozzle on the applicator head; and

an actuator operable on the pump chamber for pumping a dose of medicament in the chamber through the outlet and dispensing a corresponding medicament dose from the dispensing nozzle onto the scalp or other body area,

wherein the applicator head further comprises an application face for spreading the dispensed medicament over a body area to be treated.

2. A hand–held applicator for self-administration of a semi-solid medicament directly to the scalp, the applicator comprising:

an applicator head comprising one or more elongate dispensing nozzles for penetrating the hair and contacting the scalp in the area to be treated;

an applicator body for housing a medicament reservoir;

a pump assembly comprising at least one pump chamber having an inlet for receiving medicament from the medicament reservoir and one or more outlets for discharging medicament to the or each dispensing nozzle on the applicator head; and

an actuator operable on the or each pump chamber for pumping a dose of medicament in the chamber through the or each outlet and dispensing a corresponding medicament dose from the one or more of the dispensing nozzles onto the scalp,

wherein the applicator head and applicator body are fixed relative to each other in use such that movement of the nozzle or nozzles away from the scalp or other body area during actuation may be avoided.

3. A hand–held applicator for self-administration of a semi-solid medicament directly to the scalp, the applicator comprising:

an applicator head comprising one or more elongate dispensing nozzles for penetrating the hair and contacting the scalp in the area to be treated;

an applicator body for housing a medicament reservoir;

a pump assembly comprising at least one pump chamber having an inlet for receiving medicament from the medicament reservoir and one or more outlets for discharging medicament to the or each dispensing nozzle on the applicator head; and

an actuator operable on the or each pump chamber for pumping a dose of medicament in the chamber through the or each outlet and dispensing a corresponding medicament dose from the one or more of the dispensing nozzles onto the scalp,

wherein the applicator head is interchangeable on the applicator body to enable the applicator to be modified from a single nozzle applicator to a multi-nozzle applicator and vice versa.

4. A hand–held applicator for self-administration of a semi-solid medicament directly to the scalp, the applicator comprising:

an applicator head comprising a plurality of elongate dispensing nozzles for penetrating the hair and contacting the scalp in the area to be treated;

an applicator body for housing a medicament reservoir;

a pump assembly comprising at least one pump chamber having an inlet for receiving medicament from the medicament reservoir and one or more outlets for discharging medicament to each dispensing nozzle on the applicator head;

an actuator operable on the or each pump chamber for pumping a predetermined dose of medicament from the chamber through the or each outlet and dispensing a corresponding medicament dose from the one or more of the dispensing nozzles onto the scalp; and

a nozzle selector mechanism adapted to permit medicament to be dispensed from all nozzles when in a first selected mode and to permit medicament to be dispensed from a single nozzle only when in a second selected mode.

5. An applicator according to any one of claims 2 to 4, wherein the applicator head further comprises an application face for spreading dispensed medicament over a body area to enable the applicator to fulfil a dual function as a scalp and body applicator.

6. An applicator according to claims 1 or 5, wherein the application face is disposed adjacent a dispensing nozzle.

7. An applicator according to any one of the preceding claims comprising an airless delivery system whereby medicament in the applicator is substantially isolated from contact with air.

8. An applicator according to any one of the preceding claims, wherein the applicator body comprises a medicament cartridge.

9. An applicator according to any one of the preceding claims, further comprising a cartridge port for receiving a dispensing end of a cartridge charged with medicament, whereby the cartridge port is in fluid communication with the or each inlet to a respective pump chamber of the pump assembly.

10. An applicator according to claim 9, wherein the cartridge port comprises a sealing member for sealing against the neck of the cartridge to prevent leakage of medicament.

11. An applicator according to claim 10, wherein the sealing member comprises a stopper for insertion in the cartridge neck to displace air from the cartridge, the stopper including a central bore for permitting medicament to flow from the cartridge to the pump chamber via the inlet.

12. An applicator according to claim 10 or claim 11, wherein the cartridge port further comprises a cap for engaging with an outer wall of the cartridge neck to fix the sealing member with respect to the neck.

13. An applicator according to any one of claims 8 to 11, further comprising a priming insert for advancing a cartridge plunger at the non-dispensing end of the cartridge along the cartridge body to displace air from the cartridge and prime the applicator with medicament prior to its first use.

14. An applicator according to any one of the preceding claims, wherein the applicator head, pump assembly and actuator together comprise a unitary head assembly for connection with a medicament cartridge that comprises the applicator body.

15. An applicator according to claim 14, wherein the head assembly is provided with a non-return mechanism for preventing disengagement of the head assembly from the cartridge once the cartridge has been fitted to the head assembly.

16. An applicator according to any one of the preceding claims, wherein the or each dispensing nozzle projects at an inclined angle with respect to the applicator body, and where more than one nozzle is provided, the nozzles extend parallel with each other.

17. An applicator according to claim 16, wherein the or each nozzle extends substantially normally from an inclined face of the applicator head.

18. An applicator according to claim 16 comprising a single nozzle and an application face for spreading dispensed medicament over a body area, wherein the nozzle and application face together comprise a substantially continuous surface of the applicator.

19. An applicator according to any one of the preceding claims, wherein the or each nozzle is tapered, preferably decreasing in cross-section towards the nozzle tip to enhance penetration of the hair during scalp application.

20. An applicator according to any one of claims 1 to 17 having a plurality, preferably three, spaced apart nozzles.

21. An applicator according to claim 20, wherein the nozzles are spaced at least 20mm and less than 40mm apart, preferably between about 25mm and 35mm apart, more preferably from 27mm to 33mm apart.

22. An applicator according to claim 21, wherein the tips of the nozzles each lie on the same plane for enabling all nozzle tips to rest against the scalp of a user simultaneously.

23. An applicator according to any one of the preceding claims, wherein the or each nozzle comprises a nozzle stem of a substantially rigid material and a nozzle tip of a material that less rigid than the nozzle stem material, and preferably a resilient, elastomeric material.

24. An applicator according to claim 23, wherein the or each nozzle stem terminates in an end port and the or each nozzle tip has one or more side ports, preferably a pair of opposing side ports, in fluid communication with the stem end port and from which medicament may be dispensed.

25. An applicator according to any one of claims 1 to 17, and 19 to 24 having a plurality of spaced apart nozzles and further comprising a nozzle selector mechanism adapted to permit medicament to be dispensed from all nozzles when in a first selected mode and to permit medicament to be dispensed from a single nozzle only when in a second selected mode.

26. An applicator according to claim 25, wherein the nozzle selector mechanism is further adapted to prevent medicament being dispensed from all nozzles when in a third selected mode.

27. An applicator according to claim 25 or 26, wherein the single nozzle is longer than the other nozzles, and the nozzle tips of all nozzles lie in the same plane for enabling all nozzle tips to rest against the scalp of a user simultaneously when the nozzle selector mechanism is in the first selected mode and for enabling the single nozzle only to rest against the scalp by altering the angle at which the applicator body is held when the selector mechanism is in the second selected mode.

28. An applicator according to any one of the preceding claims, further including an inlet valve for sealing the inlet from the medicament reservoir under positive pressure in the pump chamber and opening the inlet under negative pressure in the pump chamber to permit medicament to flow from the reservoir into the chamber.

29. An applicator according to any one of the preceding claims, further including one or more outlet valves for sealing the outlet from the or each pump chamber under negative pressure in the pump chamber and opening the outlet under positive pressure within the pump chamber to permit medicament to flow from the chamber to the nozzle or nozzles.

30. An applicator according to claim 28 or claim 29, wherein the or each inlet valve, or the or each outlet valve, or both comprises a unitary valve moulding having a valve member for closing the inlet or outlet, an anchor portion for securing the moulding with respect to the inlet or outlet, and a spring portion between the valve member and anchor portion for urging the valve member against the inlet or outlet to close the valve.

31. An applicator according to claim 29 or claim 30, wherein the or each outlet valve comprises a resilient, elastomeric material, permitting outward deformation away from its respective outlet during application of a discharging force on the pump chamber.

32. An applicator according to any one of the preceding claims, wherein the or each pump chamber is a collapsible chamber, preferably a rolling diaphragm chamber.

33. An applicator according to claim 32, wherein the or each collapsible chamber has an outer casing for guiding the side walls of the chamber when the actuator is operated thereupon.

34. An applicator according to claim 33, wherein the outer casing has an aperture aligned with a central, longitudinal axis of the chamber and the pump assembly further comprises a chamber pin that extends through the aperture such that one end thereof is in contact with an end wall of the chamber and the other end is pushed by the actuator to force the end wall of the chamber inwards to collapse the chamber upon operation of the actuator.

35. An applicator according to any one of claims 1 to 31, wherein the or each pump chamber comprises a cylinder.

36. An applicator according to claim 35, wherein the longitudinal axis of the cylinder is substantially normal to the longitudinal axis of the applicator body.

37. An applicator according to any one of the preceding claims, wherein the actuator comprises a plunger, preferably comprising a plunger body and actuating rod, for displacing medicament from the or each pump chamber and a lever arm rotatable about a fulcrum for advancing the plunger.

38. An applicator according to any one of claims 1 to 17, and 19 to 37 wherein the applicator head has three nozzles and the pump assembly comprises two pump chambers, one chamber having an outlet for dispensing medicament to one of the nozzles, and the other chamber having an outlet for dispensing medicament to the remaining two nozzles, the applicator further comprising a nozzle selector mechanism for selectively discharging medicament from both the chambers in a first operating mode and discharging medicament from the one chamber only in a second operating mode.

39. An applicator according to claim 38, wherein the one chamber has a capacity substantially half that of the other chamber such that the volume of medicament dispensed in the first operating mode is approximately three times the volume of medicament dispensed from the single nozzle in the second operating mode.

40. An applicator according to claim 38 or 39, wherein both pump chambers comprise rolling diaphragm chambers and an associated casing, the end walls of each chamber being joined to a respective chamber pin that extends through a central aperture in each casing and wherein the actuator comprises a plunger rotatable about a longitudinal axis parallel with the longitudinal axes of the pump chambers and selectively operable on one or both chamber pins according to the rotated position when actuated.

41. An applicator according to any one of the preceding claims, wherein the actuator comprises a rotatable plunger, and the applicator further comprises a dial for rotating the plunger whereby the plunger may be rotated to a single nozzle dispensing position in which actuation thereof results in discharge of medicament from one pump chamber and, if the applicator includes two or more pump chambers, the plunger may also be

rotated to a multiple nozzle dispensing position in which actuation results in discharge from all pump chambers.

42. An applicator according to claim 41, wherein the plunger may be rotated by the dial to a locking position in which actuation of the plunger results in no discharge of medicament.

43. An applicator according to claim 41 or 42, wherein the rotatable plunger comprises a plunger body having a front actuating face and an actuator rod of asymmetric cross-section projecting from the rear of the plunger body and the dial has a central aperture of corresponding cross-section for receiving the actuator rod whereby rotation of the dial effects rotation of the plunger.

44. An applicator according to claim 43, comprising two or more pump chambers having chamber pins extending therefrom and wherein the front actuation face of the plunger body is provided with three or more apertures, the apertures spaced in such a way that when rotated to a first plunger position the plunger face advances all chamber pins upon actuation of the actuator rod thereby to discharge medicament from all pump chambers, when rotated to a second plunger position the plunger face advances only the chamber pin associated with the pump chamber that discharges to a single nozzle (the other chamber pin being received in an aperture so that it is not advanced), and when rotated to a third plunger position the plunger face contacts none of the chamber pins (all chamber pins being received in respective apertures) so that no medicament is discharged upon actuation.

45. An applicator according to claim 44, further comprising an insert interposed between the dial and plunger body, the insert having a plurality of internal projections acting as keys that co-operate with external projections on the plunger body to permit reciprocating (back and forth) movement of the plunger body only when the plunger body is in pumping (single and multiple nozzle dispensing) or locked positions.

46. An applicator according to any one of the preceding claims, further comprising a detachable cover for protecting the application face and sealing the or each nozzle when the applicator is not in use.

47. An applicator according to claim 46, wherein the cover further comprises an actuator lock for preventing operation of the actuator when the cover is fitted.

48. A system for dispensing semi-solid preparations comprising:
a dispensing head and
a cartridge for the preparation having a dispensing nozzle for engaging with the dispensing head and a plunger for advancing along the cartridge as the preparation is dispensed,
wherein the dispensing head comprises a cartridge port including a stopper for insertion into and sealing against the cartridge nozzle as the cartridge is engaged with the cartridge port, the stopper having a bore therethrough to permit preparation to flow from the cartridge to the dispensing head via an inlet valve during a dispensing operation, and
wherein the stopper bore is provided with a vent and the dispenser head includes a passage having a constricted section in fluid communication with the vent, whereby preparation displaced by the stopper upon insertion into the cartridge nozzle is forced into the bore and out through the vent into the constricted passage whereupon the pressure required to force further preparation into the passage becomes greater than the pressure required to move the cartridge plunger and any further displaced preparation is accommodated in the cartridge through reverse movement of the plunger.

49. A dispensing system according to claim 48, wherein the stopper has a length such that when fully inserted within the cartridge nozzle its leading end projects beyond a minimum fill level of the cartridge, and preferably the stopper extends substantially along the full length of the cartridge nozzle when fully inserted.

50. A dispensing system according to claim 48 or 49, wherein the capacity of the passage, at least that part of the passage that is before (upstream of) the constricted section, is such as to accommodate a volume of preparation less than the total volume of preparation that would be displaced by the stopper if the cartridge were filled only to the minimum fill level.

51. A dispensing system according to any one of claims 48 to 50, wherein the inlet valve is provided within the stopper bore.

52. A dispensing system according to any one of claims 48 to 51, wherein the inlet valve comprises an inclined valve seat projecting into the bore from the inner bore wall and a valve closing member for sealing against the valve seat.

53. A dispensing system according to claim 52, wherein the valve closing member comprises a spring-loaded ball.

54. A dispensing system according to any one of claims 51 to 53, wherein the vent is located adjacent the inlet valve for permitting the bore to be substantially fully charged with preparation upstream of the inlet valve as the stopper is advanced into the cartridge nozzle.

55. A dispensing system according to any one of claims 48 to 54, wherein the bore contains an inner tube having a diameter and length less than the diameter and length of the bore extending from the inlet valve, preferably extending into the bore from the valve seat, such that on assembly of the dispenser head and cartridge preparation displaced by the stopper flows along the bore as far as the inner tube whereupon the preparation is forced around the outside of inner tube to the vent and passage beyond.

56. A dispensing system according to claim 55, wherein the inner tube extends into the bore beyond the position of the vent, but terminates substantially short of the end of the stopper.

57. A dispensing system according to claim 56, wherein volume of the inner tube is such that following assembly of the cartridge and dispenser head, a first actuation of the dispenser results in any residual air being purged from the inner tube and preparation being sucked into the inner tube to wet the inlet valve.

58. A dispensing system according to any one of claims 48 to 57, wherein the air and preparation is vented to a first passage section permitting free flow of vented air and

preparation followed by a second passage section which is constricted relative to the first section permitting free flow of air but providing resistance to the flow of preparation.

59. A dispensing system according to claim 58, wherein the dispensing head further further comprises a manifold, and wherein the manifold and stopper together define the cartridge port.

60. A dispensing system according to claim 59, wherein the first passage section comprises a space, such as a continuous space or a plurality of channels, between the stopper and manifold, and the second passage section comprises one or more channels of smaller cross-section than in the first section also between the stopper and manifold.

61. A dispensing system according to claim 60, wherein the second passage section comprises a complementary threaded section between the stopper and manifold.

62. A dispensing system according to any one of claims 48 to 61, wherein the stopper comprises a double-walled member, and wherein the inwardly directed surface of the inner wall provides the central bore and the outwardly directed surface of the outer wall provides the seal for sealing against the inner wall of the cartridge nozzle when the dispenser head and cartridge are assembled.

63. A dispensing system according to claim 62, wherein the outwardly directed surface of the outer stopper wall comprises a lip seal or the like.

64. A dispensing system according to claim 62 or 63, wherein the gap between the inner and outer stopper walls provides a substantially U-shaped cylindrical channel, closed at the front end for forcing preparation into the central bore as the stopper is inserted into the cartridge nozzle and wherein the vent is provided through the inner stopper wall of the stopper, whereby air and preparation displaced by advancement of the stopper in the cartridge nozzle when the system is assembled are initially forced along the bore towards the vent before exiting the vent for the passage.

65. A dispensing system according to any one of claims 62 to 64, wherein the channel of the double-walled stopper is adapted to receive and accommodate a tubular

portion of the dispenser head manifold, and the tubular portion and cylindrical channel are dimensioned relative to each other such as to create the passage therebetween through which air and preparation is forced via the vent.

66. A dispensing system according to claim 65, wherein the passage follows a path initially down along the outwardly facing surface of the inner stopper wall, along the base of the channel and up along the inwardly facing surface of the outer stopper wall.

67. A dispensing system according to claim 66, wherein the constricted section of the passage is created by complementary threaded sections on the inwardly directed face of the outer stopper wall and outwardly directed face of the manifold tubular portion, preferably adjacent the open end of the U-shaped channel.

68. A dispensing system according to any one of claims 48 to 67, wherein the dispensing head further includes a chamber into which displaced air may be contained, preferably downstream of the constricted passage.

69. A dispensing system according to claim 68, wherein the chamber is sealed by the cartridge nozzle when the cartridge is assembled with the dispensing head.

70. A dispensing system according to any one of claims 48 to 69, wherein the manifold further comprises connecting features for securing the cartridge to the dispensing head.

71. A dispensing system according to any one of claims 48 to 70, wherein the dispensing head and cartridge are provided with a one-way lock mechanism permitting assembly of the dispenser head and cartridge but preventing their separation once assembled.

72. A dispensing system according to claim 71, wherein the manifold includes one or more, preferably an opposing pair, of head locking clips and the cartridge includes a plurality of engagement ribs, and wherein the clips ride over engagement ribs when the cartridge is screwed on to the dispenser head, but act as a barrier to the ribs when an attempt is made to unscrew the assembly.

73. A dispensing system according to any one of claims 48 to 72, wherein the dispensing head further comprises a pump assembly comprising a pump chamber and an outlet through which preparation is dispensed, and an actuator operable on the pump chamber for pumping preparation from the cartridge into the chamber via the inlet and out through the outlet.

74. A dispensing system according to claims 73, wherein the dispensing head further comprises one or more elongate nozzles in fluid communication with the outlet for penetrating the hair and applying preparation to the scalp or other body area.

75. The dispensing system of claim 74, wherein the system comprises a hand-held applicator as claimed in any one of claims 1 to 47.

76. A cartridge for storing a reservoir of medicament having a first dispensing end adapted for fitting to a cartridge port of an applicator or dispensing head according to any one of the preceding claims.

77. A cartridge according to claim 76, wherein the cartridge includes a lock structure for interlocking with a complementary structure on the applicator or dispensing head whereby the locking structures co-operate to permit assembly and prevent disassembly.

78. A cartridge according to claim 77, wherein the lock structure comprises a plurality of engagement ribs on a collar around the cartridge nozzle neck for engaging with complementary locking clips on the applicator or dispensing head.

79. A cartridge according to any one of claims 76 to 78, wherein the cartridge neck is adapted to receive and seal with a stopper of an applicator head assembly or manifold of a dispenser head to form an airtight connection after displacement of air from the cartridge neck by insertion of the stopper.

80. A cartridge according to claim 79, wherein the inner wall of the cartridge neck is tapered at its open end, the tapered section providing a sealing surface for a manifold sealing wall.

81. A cartridge according to any one of claims 76 to 81, wherein the cartridge neck is double walled to provide a secondary chamber for receiving any medicament forced out of the cartridge from between the neck and the stopper on insertion of the stopper.

82. A cartridge according to any one of claims 76 to 81, comprising a tube or the like for accommodating medicament and a plunger in sealing contact with the inner tube wall, the plunger being adapted to advance up the tube wall under negative pressure created when medicament is discharged from the or each pump chamber of the applicator.

83. A cartridge according to claim 82, further comprising a cartridge cap for sealing the dispensing end of the cartridge prior to use and wherein the cartridge cap has a dual function as a priming insert for insertion at the non-dispensing end of the cartridge to advance the plunger from behind and prime the applicator for use.

84. A cartridge according to any one of claims 76 to 83, further provided with an end cap at its non-dispensing end for sealing an open end of the applicator body when the cartridge is for insertion into an applicator body.

85. An applicator according to any one of claims 1 to 47, fitted with a medicament cartridge as claimed in any one of claims 76 to 84.

86. An applicator system for use in applying medicament to a patient characterised by an applicator according to any one of claims 1 to 47 and a cartridge according to any one of claims 76 to 85.

87. A method of delivering semi-solid medicament to the scalp or other body area, said method comprising (i) charging the medicament to an applicator body of an applicator, the applicator further comprising an applicator head fixed relative to the applicator body and having one or more elongate dispensing nozzles for contacting areas the scalp and other body areas, a pump assembly comprising at least one pump chamber having an inlet for receiving medicament from the applicator body and one or more outlets for discharging medicament to the or each dispensing nozzle and an

actuator operable on the or each pump chamber for pumping a dose of medicament in the chamber through the or each outlet, (ii) priming the applicator to transfer medicament from the applicator body to the pump chamber and the or each nozzle, and (iii) thereafter delivering medicament by bringing the or each nozzle into contact with the scalp or other body area and (iv) operating the actuator to pump a dose of medicament from the chamber through the nozzle and discharge a dose of medicament from the nozzle onto the scalp or other body area.

88. The method of claim 87, wherein the charging step comprises inserting a dispensing end of a cartridge charged with medicament into a cartridge port on the applicator which cartridge port is in fluid communication with the inlet to the pump chamber.

CLAIMS

1. A hand–held applicator for targeted self-administration of a semi-solid medicament directly to the scalp and to other body areas, the applicator comprising:

an applicator head comprising an elongate dispensing nozzle for contacting areas of the scalp and other body areas;

an applicator body for housing a medicament reservoir;

a pump assembly comprising a pump chamber having an inlet for receiving medicament from the medicament reservoir and an outlet for discharging medicament to the dispensing nozzle on the applicator head; and

an actuator operable on the pump chamber for pumping a dose of medicament in the chamber through the outlet and dispensing a corresponding medicament dose from the dispensing nozzle onto the scalp or other body area,

in which the applicator head further comprises an application face for spreading the dispensed medicament over a body area to be treated.

2. A hand–held applicator for self-administration of a semi-solid medicament directly to the scalp, the applicator comprising:

an applicator head comprising one or more elongate dispensing nozzles for penetrating the hair and contacting the scalp in the area to be treated;

an applicator body for housing a medicament reservoir;

a pump assembly comprising at least one pump chamber having an inlet for receiving medicament from the medicament reservoir and one or more outlets for discharging medicament to the or each dispensing nozzle on the applicator head; and

an actuator operable on the or each pump chamber for pumping a dose of medicament in the chamber through the or each outlet and dispensing a corresponding medicament dose from the one or more of the dispensing nozzles onto the scalp,

in which the applicator head and applicator body are fixed relative to each other in use such that movement of the nozzle or nozzles away from the scalp or other body area during actuation may be avoided.

3. A hand–held applicator for self-administration of a semi-solid medicament directly to the scalp, the applicator comprising:

an applicator head comprising one or more elongate dispensing nozzles for penetrating the hair and contacting the scalp in the area to be treated;

an applicator body for housing a medicament reservoir;

a pump assembly comprising at least one pump chamber having an inlet for receiving medicament from the medicament reservoir and one or more outlets for discharging medicament to the or each dispensing nozzle on the applicator head; and

an actuator operable on the or each pump chamber for pumping a dose of medicament in the chamber through the or each outlet and dispensing a corresponding medicament dose from the one or more of the dispensing nozzles onto the scalp,

in which the applicator head is interchangeable on the applicator body to enable the applicator to be modified from a single nozzle applicator to a multi-nozzle applicator and vice versa.

4. A hand–held applicator for self-administration of a semi-solid medicament directly to the scalp, the applicator comprising:

an applicator head comprising a plurality of elongate dispensing nozzles for penetrating the hair and contacting the scalp in the area to be treated;

an applicator body for housing a medicament reservoir;

a pump assembly comprising at least one pump chamber having an inlet for receiving medicament from the medicament reservoir and one or more outlets for discharging medicament to each dispensing nozzle on the applicator head;

an actuator operable on the or each pump chamber for pumping a predetermined dose of medicament from the chamber through the or each outlet and dispensing a corresponding medicament dose from the one or more of the dispensing nozzles onto the scalp; and

a nozzle selector mechanism adapted to permit medicament to be dispensed from all nozzles when in a first selected mode and to permit medicament to be dispensed from a single nozzle only when in a second selected mode.

5. An applicator according to any of Claims 2 to 4, in which the applicator head further comprises an application face for spreading dispensed medicament over a body area to enable the applicator to fulfil a dual function as a scalp and body applicator.

6. An applicator according to Claims 1 or 5, in which the application face is disposed adjacent a dispensing nozzle.

7. An applicator according to any preceding claim comprising an airless delivery system whereby medicament in the applicator is substantially isolated from contact with air.

8. An applicator according to any preceding claim, in which the applicator body comprises a medicament cartridge.

9. An applicator according to any preceding claim, further comprising a cartridge port for receiving a dispensing end of a cartridge charged with medicament, whereby the cartridge port is in fluid communication with the or each inlet to a respective pump chamber of the pump assembly.

10. An applicator according to Claim 9, in which the cartridge port comprises a sealing member for sealing against the neck of the cartridge to prevent leakage of medicament.

11. An applicator according to Claim 10, in which the sealing member comprises a stopper for insertion in the cartridge neck to displace air from the cartridge, the stopper including a central bore for permitting medicament to flow from the cartridge to the pump chamber via the inlet.

12. An applicator according to Claim 10 or Claim 11, in which the cartridge port further comprises a cap for engaging with an outer wall of the cartridge neck to fix the sealing member with respect to the neck.

13. An applicator according to any of Claims 8 to 11, further comprising a priming insert for advancing a cartridge plunger at the non-dispensing end of the cartridge along the cartridge body to displace air from the cartridge and prime the applicator with medicament prior to its first use.

14. An applicator according to any of the preceding claims, in which the applicator head, pump assembly and actuator together comprise a unitary head assembly for connection with a medicament cartridge that comprises the applicator body.

15. An applicator according to Claim 14, in which the head assembly is provided with a non-return mechanism for preventing disengagement of the head assembly from the cartridge once the cartridge has been fitted to the head assembly.

16. An applicator according to any preceding claim, in which the or each dispensing nozzle projects at an inclined angle with respect to the applicator body, and where more than one nozzle is provided, the nozzles extend parallel with each other.

17. An applicator according to Claim 16, in which the or each nozzle extends substantially normally from an inclined face of the applicator head.

18. An applicator according to Claim 16 comprising a single nozzle and an application face for spreading dispensed medicament over a body area, in which the nozzle and application face together comprise a substantially continuous surface of the applicator.

19. An applicator according to any preceding claim, in which the or each nozzle is tapered, preferably decreasing in cross-section towards the nozzle tip to enhance penetration of the hair during scalp application.

20. An applicator according to any of Claims 1 to 17 having a plurality, preferably three, spaced apart nozzles.

21. An applicator according to Claim 20, in which the nozzles are spaced at least 20mm and less than 40mm apart, preferably between about 25mm and 35mm apart, more preferably from 27mm to 33mm apart.

22. An applicator according to Claim 21, in which the tips of the nozzles each lie on the same plane for enabling all nozzle tips to rest against the scalp of a user simultaneously.

23. An applicator according to any preceding claim, in which the or each nozzle comprises a nozzle stem of a substantially rigid material and a nozzle tip of a material that less rigid than the nozzle stem material, and preferably a resilient, elastomeric material.

24. An applicator according to Claim 23, in which the or each nozzle stem terminates in an end port and the or each nozzle tip has one or more side ports, preferably a pair of opposing side ports, in fluid communication with the stem end port and from which medicament may be dispensed.

25. An applicator according to any of Claims 1 to 17, and 19 to 24 having a plurality of spaced apart nozzles and further comprising a nozzle selector mechanism adapted to permit medicament to be dispensed from all nozzles when in a first selected mode and to permit medicament to be dispensed from a single nozzle only when in a second selected mode.

26. An applicator according to Claim 25, in which the nozzle selector mechanism is further adapted to prevent medicament being dispensed from all nozzles when in a third selected mode.

27. An applicator according to Claim 25 or 26, in which the single nozzle is longer than the other nozzles, and the nozzle tips of all nozzles lie in the same plane for enabling all nozzle tips to rest against the scalp of a user simultaneously when the nozzle selector mechanism is in the first selected mode and for enabling the single nozzle only to rest against the scalp by altering the angle at which the applicator body is held when the selector mechanism is in the second selected mode.

28. An applicator according to any preceding claim, further including an inlet valve for sealing the inlet from the medicament reservoir under positive pressure in the pump chamber and opening the inlet under negative pressure in the pump chamber to permit medicament to flow from the reservoir into the chamber.

29. An applicator according to any preceding claim, further including one or more outlet valves for sealing the outlet from the or each pump chamber under negative pressure in the pump chamber and opening the outlet under positive pressure within the pump chamber to permit medicament to flow from the chamber to the nozzle or nozzles.

30. An applicator according to Claim 28 or Claim 29, in which the or each inlet valve, or the or each outlet valve, or both comprises a unitary valve moulding having a valve member for closing the inlet or outlet, an anchor portion for securing the moulding with respect to the inlet or outlet, and a spring portion between the valve member and anchor portion for urging the valve member against the inlet or outlet to close the valve.

31. An applicator according to Claim 29 or Claim 30, in which the or each outlet valve comprises a resilient, elastomeric material, permitting outward deformation away from its respective outlet during application of a discharging force on the pump chamber.

32. An applicator according to any preceding claim, in which the or each pump chamber is a collapsible chamber, preferably a rolling diaphragm chamber.

33. An applicator according to Claim 32, in which the or each collapsible chamber has an outer casing for guiding the side walls of the chamber when the actuator is operated thereupon.

34. An applicator according to Claim 33, in which the outer casing has an aperture aligned with a central, longitudinal axis of the chamber and the pump assembly further comprises a chamber pin that extends through the aperture such that one end thereof is in contact with an end wall of the chamber and the other end is pushed by the actuator to force the end wall of the chamber inwards to collapse the chamber upon operation of the actuator.

35. An applicator according to any of Claims 1 to 31, in which the or each pump chamber comprises a cylinder.

36. An applicator according to Claim 35, in which the longitudinal axis of the cylinder is substantially normal to the longitudinal axis of the applicator body.

37. An applicator according to any preceding claim, in which the actuator comprises a plunger, preferably comprising a plunger body and actuating rod, for displacing medicament from the or each pump chamber and a lever arm rotatable about a fulcrum for advancing the plunger.

38. An applicator according to any of Claims 1 to 17, and 19 to 37 in which the applicator head has three nozzles and the pump assembly comprises two pump chambers, one chamber having an outlet for dispensing medicament to one of the nozzles, and the other chamber having an outlet for dispensing medicament to the remaining two nozzles, the applicator further comprising a nozzle selector mechanism for selectively discharging medicament from both the chambers in a first operating mode and discharging medicament from the one chamber only in a second operating mode.

39. An applicator according to Claim 38, in which the one chamber has a capacity substantially half that of the other chamber such that the volume of medicament dispensed in the first operating mode is approximately three times the volume of medicament dispensed from the single nozzle in the second operating mode.

40. An applicator according to Claim 38 or 39, in which both pump chambers comprise rolling diaphragm chambers and an associated casing, the end walls of each chamber being joined to a respective chamber pin that extends through a central aperture in each casing and in which the actuator comprises a plunger rotatable about a longitudinal axis parallel with the longitudinal axes of the pump chambers and selectively operable on one or both chamber pins according to the rotated position when actuated.

41. An applicator according to any preceding claim, in which the actuator comprises a rotatable plunger, and the applicator further comprises a dial for rotating the plunger whereby the plunger may be rotated to a single nozzle dispensing position in which actuation thereof results in discharge of medicament from one pump chamber and, if the applicator includes two or more pump chambers, the plunger may also be rotated to a multiple nozzle dispensing position in which actuation results in discharge from all pump chambers.

42. An applicator according to Claim 41, in which the plunger may be rotated by the dial to a locking position in which actuation of the plunger results in no discharge of medicament.

43. An applicator according to Claim 41 or 42, in which the rotatable plunger comprises a plunger body having a front actuating face and an actuator rod of asymmetric cross-section projecting from the rear of the plunger body and the dial has a central aperture of corresponding cross-section for receiving the actuator rod whereby rotation of the dial effects rotation of the plunger.

44. An applicator according to Claim 43, comprising two or more pump chambers having chamber pins extending therefrom and in which the front actuation face of the plunger body is provided with three or more apertures, the apertures spaced in such a way that when rotated to a first plunger position the plunger face advances all chamber pins upon actuation of the actuator rod thereby to discharge medicament from all pump chambers, when rotated to a second plunger position the plunger face advances only the chamber pin associated with the pump chamber that discharges to a single nozzle (the other chamber pin being received in an aperture so that it is not advanced), and when rotated to a third plunger position the plunger face contacts none of the chamber pins (all chamber pins being received in respective apertures) so that no medicament is discharged upon actuation.

45. An applicator according to Claim 44, further comprising an insert interposed between the dial and plunger body, the insert having a plurality of internal projections acting as keys

that co-operate with external projections on the plunger body to permit reciprocating (back and forth) movement of the plunger body only when the plunger body is in pumping (single and multiple nozzle dispensing) or locked positions.

46. An applicator according to any preceding claim, further comprising a detachable cover for protecting the application face and sealing the or each nozzle when the applicator is not in use.

47. An applicator according to Claim 46, in which the cover further comprises an actuator lock for preventing operation of the actuator when the cover is fitted.

48. An applicator according to any preceding claim for dispensing semi-solid preparations comprising:

a dispensing head and

a cartridge for the preparation having a dispensing nozzle for engaging with the dispensing head and a plunger for advancing along the cartridge as the preparation is dispensed,

in which the dispensing head comprises a cartridge port including a stopper for insertion into and sealing against the cartridge nozzle as the cartridge is engaged with the cartridge port, the stopper having a bore therethrough to permit preparation to flow from the cartridge to the dispensing head via an inlet valve during a dispensing operation, and

in which the stopper bore is provided with a vent and the dispenser head includes a passage having a constricted section in fluid communication with the vent, whereby preparation displaced by the stopper upon insertion into the cartridge nozzle is forced into the bore and out through the vent into the constricted passage whereupon the pressure required to force further preparation into the passage becomes greater than the pressure required to move the cartridge plunger and any further displaced preparation is accommodated in the cartridge through reverse movement of the plunger.

49. An applicator according to Claim 48, in which the stopper has a length such that when fully inserted within the cartridge nozzle its leading end projects beyond a minimum fill level of the cartridge, and preferably the stopper extends substantially along the full length of the cartridge nozzle when fully inserted.

50. An applicator according to Claim 48 or 49, in which the capacity of the passage, at least that part of the passage that is before (upstream of) the constricted section, is such as to accommodate a volume of preparation less than the total volume of preparation that would be displaced by the stopper if the cartridge were filled only to the minimum fill level.

51. An applicator according to any of Claims 48 to 50, in which the inlet valve is provided within the stopper bore.

52. An applicator according to any of Claims 48 to 51, in which the inlet valve comprises an inclined valve seat projecting into the bore from the inner bore wall and a valve closing member for sealing against the valve seat.

53. An applicator according to Claim 52, in which the valve closing member comprises a spring-loaded ball.

54. An applicator according to any of Claims 51 to 53, in which the vent is located adjacent the inlet valve for permitting the bore to be substantially fully charged with preparation upstream of the inlet valve as the stopper is advanced into the cartridge nozzle.

55. An applicator according to any of Claims 48 to 54, in which the bore contains an inner tube having a diameter and length less than the diameter and length of the bore extending from the inlet valve, preferably extending into the bore from the valve seat, such that on assembly of the dispenser head and cartridge preparation displaced by the stopper flows along the bore as far as the inner tube whereupon the preparation is forced around the outside of inner tube to the vent and passage beyond.

56. An applicator according to Claim 55, in which the inner tube extends into the bore beyond the position of the vent, but terminates substantially short of the end of the stopper.

57. An applicator according to Claim 56, in which volume of the inner tube is such that following assembly of the cartridge and dispenser head, a first actuation of the dispenser results in any residual air being purged from the inner tube and preparation being sucked into the inner tube to wet the inlet valve.

58. An applicator according to any of Claims 48 to 57, in which the air and preparation is vented to a first passage section permitting free flow of vented air and preparation followed by

a second passage section which is constricted relative to the first section permitting free flow of air but providing resistance to the flow of preparation.

59. An applicator according to Claim 58, in which the dispensing head further comprises a manifold, and in which the manifold and stopper together define the cartridge port.

60. An applicator according to Claim 59, in which the first passage section comprises a space, such as a continuous space or a plurality of channels, between the stopper and manifold, and the second passage section comprises one or more channels of smaller cross-section than in the first section also between the stopper and manifold.

61. An applicator according to Claim 60, in which the second passage section comprises a complementary threaded section between the stopper and manifold.

62. An applicator according to any of Claims 48 to 61, in which the stopper comprises a double-walled member, and in which the inwardly directed surface of the inner wall provides the central bore and the outwardly directed surface of the outer wall provides the seal for sealing against the inner wall of the cartridge nozzle when the dispenser head and cartridge are assembled.

63. An applicator according to Claim 62, in which the outwardly directed surface of the outer stopper wall comprises a lip seal or the like.

64. An applicator according to Claim 62 or 63, in which the gap between the inner and outer stopper walls provides a substantially U-shaped cylindrical channel, closed at the front end for forcing preparation into the central bore as the stopper is inserted into the cartridge nozzle and in which the vent is provided through the inner stopper wall of the stopper, whereby air and preparation displaced by advancement of the stopper in the cartridge nozzle when the system is assembled are initially forced along the bore towards the vent before exiting the vent for the passage.

65. An applicator according to any of Claims 62 to 64, in which the channel of the double-walled stopper is adapted to receive and accommodate a tubular portion of the dispenser head manifold, and the tubular portion and cylindrical channel are dimensioned relative to each other such as to create the passage therebetween through which air and preparation is forced via the vent.

66. An applicator according to Claim 65, in which the passage follows a path initially down along the outwardly facing surface of the inner stopper wall, along the base of the channel and up along the inwardly facing surface of the outer stopper wall.

67. An applicator according to Claim 66, in which the constricted section of the passage is created by complementary threaded sections on the inwardly directed face of the outer stopper wall and outwardly directed face of the manifold tubular portion, preferably adjacent the open end of the U-shaped channel.

68. An applicator according to any of Claims 48 to 67, in which the dispensing head further includes a chamber into which displaced air may be contained, preferably downstream of the constricted passage.

69. An applicator according to Claim 68, in which the chamber is sealed by the cartridge nozzle when the cartridge is assembled with the dispensing head.

70. An applicator according to any of Claims 48 to 69, in which the manifold further comprises connecting features for securing the cartridge to the dispensing head.

71. An applicator according to any of Claims 48 to 70, in which the dispensing head and cartridge are provided with a one-way lock mechanism permitting assembly of the dispenser head and cartridge but preventing their separation once assembled.

72. An applicator according to Claim 71, in which the manifold includes one or more, preferably an opposing pair, of head locking clips and the cartridge includes a plurality of engagement ribs, and in which the clips ride over engagement ribs when the cartridge is screwed on to the dispenser head, but act as a barrier to the ribs when an attempt is made to unscrew the assembly.

73. An applicator according to any of Claims 48 to 72, in which the dispensing head further comprises a pump assembly comprising a pump chamber and an outlet through which preparation is dispensed, and an actuator operable on the pump chamber for pumping preparation from the cartridge into the chamber via the inlet and out through the outlet.

74. An applicator according to Claim 73, in which the dispensing head further comprises one or more elongate nozzles in fluid communication with the outlet for penetrating the hair and applying preparation to the scalp or other body area.

75. A cartridge for storing a reservoir of medicament having a first dispensing end adapted for fitting to a cartridge port of an applicator or dispensing head according to any preceding claim.

76. A cartridge according to Claim 75, in which the cartridge includes a lock structure for interlocking with a complementary structure on the applicator or dispensing head whereby the locking structures co-operate to permit assembly and prevent disassembly.

77. A cartridge according to Claim 76, in which the lock structure comprises a plurality of engagement ribs on a collar around the cartridge nozzle neck for engaging with complementary locking clips on the applicator or dispensing head.

78. A cartridge according to any of Claims 75 to 77, in which the cartridge neck is adapted to receive and seal with a stopper of an applicator head assembly or manifold of a dispenser head to form an airtight connection after displacement of air from the cartridge neck by insertion of the stopper.

79. A cartridge according to Claim 78, in which the inner wall of the cartridge neck is tapered at its open end, the tapered section providing a sealing surface for a manifold sealing wall.

80. A cartridge according to any of Claims 75 to 79, in which the cartridge neck is double walled to provide a secondary chamber for receiving any medicament forced out of the cartridge from between the neck and the stopper on insertion of the stopper.

81. A cartridge according to any of Claims 75 to 80, comprising a tube or the like for accommodating medicament and a plunger in sealing contact with the inner tube wall, the plunger being adapted to advance up the tube wall under negative pressure created when medicament is discharged from the or each pump chamber of the applicator.

82. A cartridge according to Claim 81, further comprising a cartridge cap for sealing the dispensing end of the cartridge prior to use and in which the cartridge cap has a dual function as a priming insert for insertion at the non-dispensing end of the cartridge to advance the plunger from behind and prime the applicator for use.

83. A cartridge according to any of Claims 75 to 82, further provided with an end cap at its non-dispensing end for sealing an open end of the applicator body when the cartridge is for insertion into an applicator body.

84. An applicator according to any of Claims 1 to 47, fitted with a medicament cartridge as claimed in any of Claims 75 to 83.

85. An applicator system for use in applying medicament to a patient characterised by an applicator according to any of Claims 1 to 47 and a cartridge according to any of Claims 75 to 84.

86. A method of delivering semi-solid medicament to the scalp or other body area, the method comprising (i) charging the medicament to an applicator body of an applicator, the applicator further comprising an applicator head fixed relative to the applicator body and having one or more elongate dispensing nozzles for contacting areas the scalp and other body areas, a pump assembly comprising at least one pump chamber having an inlet for receiving medicament from the applicator body and one or more outlets for discharging medicament to the or each dispensing nozzle and an actuator operable on the or each pump chamber for pumping a dose of medicament in the chamber through the or each outlet, (ii) priming the applicator to transfer medicament from the applicator body to the pump chamber and the or each nozzle, and (iii) thereafter delivering medicament by bringing the or each nozzle into contact with the scalp or other body area and (iv) operating the actuator to pump a dose of medicament from the chamber through the nozzle and discharge a dose of medicament from the nozzle onto the scalp or other body area.

87. A method according to Claim 86, in which the charging step comprises inserting a dispensing end of a cartridge charged with medicament into a cartridge port on the applicator which cartridge port is in fluid communication with the inlet to the pump chamber.