**Claims**

1. An inhaler comprising a housing containing a strip of blisters each blister being defined by a blister cavity containing a dose of medicament and a puncturable lid, the inhaler including means to sequentially move each blister into alignment with means for puncturing said puncturable lid of a blister to enable a user to inhale said dose through said puncturable lid and, a spiral wound element in the said housing, the blister cavities, together with their punctured lids, being received in said spiral wound element to coil the strip, wherein the housing includes a common chamber to receive an unused blister strip and a used portion of that strip, wherein a flexible dividing wall separates the chamber into a used and unused blister compartment, the flexible dividing wall comprising a foam strip.

2. An inhaler according to claim 1, wherein the flexible dividing wall is fixed to the housing at both ends.

3. An inhaler according to claim 1, wherein the dividing wall is flexible and configured so that it extends across said common chamber between sidewalls of the inhaler to prevent passage of powdered dose between the unused and used blister compartments.

4. An inhaler according to claim 3, wherein the width of the flexible dividing wall is greater than the distance between the sidewalls so that the flexible dividing wall is held in compression between the sidewalls.

5. An inhaler according to claim 1, wherein the foam strip includes a stiffening element.

6. An inhaler according to claim 1, comprising a second spiral wound element to receive an unused blister strip for insertion into the housing during assembly, the arrangement being such that the second spiral wound element retracts as the first spiral wound element expands as the size of the coil formed from a used portion of the strip increases and the size of the coil formed from an unused portion of the strip decreases.

7. An inhaler comprising a housing to receive a strip of blisters, and an actuator to sequentially move each blister into alignment with means for opening a blister to enable a user to inhale a dose, the housing including a chamber to receive used blisters and, the inhaler further comprising an indexing wheel around which emptied blisters are fed and which rotates in response to movement of said actuator to draw the blister strip through the housing and sequentially align each blister with said means for opening a blister, the indexing wheel being configured such that blister cavities are partially squashed between the indexing wheel and a wall of the housing to compress said blister cavities as they pass around the indexing wheel.

8. An inhaler according to claim 7, wherein the indexing wheel comprises a plurality of spokes extending from a hub and the blister strip comprises a plurality of blister cavities each containing a dose of medicament and a lid sealing the dose within said cavities prior to inhalation, the blister cavities being entrained, together with their lids, between the spokes of the indexing wheel such that the blister cavities are sequentially moved into alignment with means for opening a blister in response to rotation of the indexing wheel, the indexing wheel being configured such that a distance between a surface of the hub and a wall of the housing is less than a height of a blister cavity so that the blister cavities and lids are partially squashed between the hub and said wall of the housing as they pass around the indexing wheel.

9. An inhaler according to claim 8, wherein the lid is puncturable and the means for opening the lid of a blister comprises means for puncturing said lid to enable a user to inhale said dose through said punctured lid.

10. An inhaler comprising a housing containing a strip of blisters each having a blister cavity containing a dose of medicament with a puncturable lid extending over and sealing said dose within the blister cavity, and an actuator to sequentially move each blister into alignment with means for puncturing the lid of an aligned blister to enable a user to inhale said dose, the housing including a first compartment to contain unused blisters cavities with their lids intact and a second compartment, separated from the first compartment by a movable dividing wall, to receive used blister cavities together with their punctured lids, the

inhaler further comprising an indexing wheel around which the used blister cavities and their punctured lids are fed and which rotates in response to movement of said actuator to draw the blister strip through the housing and sequentially align each unused blister cavity with said means for puncturing a blister, the indexing wheel being configured such that used blister cavities, together with their punctured lids, are partially squashed between the indexing wheel and a wall of the housing to compress said blister cavities and punctured lids as the strip passes around the indexing wheel.

11. An inhaler comprising a housing containing a strip of blisters each having a blister cavity containing a dose of medicament with a puncturable lid extending over and sealing said dose within the blister cavity, and an actuator to sequentially move each blister into alignment with means for puncturing the lid of an aligned blister to enable a user to inhale said dose, the inhaler further comprising an indexing wheel around which the used blister cavities and their punctured lids are fed and which rotates in response to movement of said actuator to draw the blister strip through the housing and sequentially align each unused blister cavity with said means for puncturing a blister, the indexing wheel being configured such that used blister cavities, together with their punctured lids, are partially squashed between the indexing wheel and a wall of the housing to compress said blister cavities and punctured lids as the strip passes around the indexing wheel, a spiral wound element being mounted in the housing such that the compressed blister cavities, together with their punctured lids, are received in the spiral wound element to coil the strip.

12. An inhaler comprising a device having a housing containing a strip of blisters each having a blister cavity containing a dose of medicament with a puncturable lid extending over and sealing said dose within the blister cavity, and an actuator to sequentially move each blister into alignment with means for puncturing the lid of an aligned blister to enable a user to inhale said dose, the housing including a first compartment to contain unused blisters cavities with their lids intact and a second compartment, separated from the first compartment by a movable dividing wall, to receive used blister cavities together with their punctured lids, the inhaler further comprising an indexing wheel around which the used blister cavities and their punctured lids are fed and which rotates in response to movement of said actuator to draw the blister strip through the housing and sequentially align each

unused blister cavity with said means for puncturing a blister, the indexing wheel being configured such that used blister cavities, together with their punctured lids, are partially squashed between the indexing wheel and a wall of the housing to compress said blister cavities and punctured lids as the strip passes around the indexing wheel, a spiral wound element being mounted in the second compartment such that the compressed blister cavities, together with their punctured lids, are received in the spiral wound element to coil the strip.

Claims

1. An inhaler comprising a housing to receive a strip of blisters each containing a dose of medicament and means to sequentially move each blister into alignment with means for opening a blister to enable a user to inhale said dose and, a spiral wound element to coil the strip.

2. An inhaler according to claim 1, wherein the spiral wound element is configured so that a used portion of the strip formed from blisters which have been aligned with said means for opening a blister, is gradually coiled within the spiral wound element.

3. An inhaler according to claim 1 or claim 2, wherein the spiral wound element is rigid.

4. An inhaler according to claim 1 or claim 2, wherein the spiral wound element is formed from a flexible material.

5. An inhaler according to claim 4, wherein the spiral wound element is formed from a deformable non-resilient material.

6. An inhaler according to claim 5, wherein the spiral wound element is formed from a resiliently deformable material.

7. An inhaler according to claim 6, wherein the resiliency of the spiral wound element is selected in dependence on the stiffness of a blister strip so that a first closed coil of a used portion of a blister strip is formed in the spiral wound element prior to any substantial deformation or expansion of the spiral wound element.

8. An inhaler according to any of claims 4 to 7, wherein the spiral wound element is configured so that it expands as the length of the used portion of the

blister strip coiled within it increases.

9. An inhaler according to any preceding claim, wherein the spiral wound element has at least one winding that extends over 360 degrees.

10. An inhaler according to any preceding claim wherein the stiffness of the spiral wound element varies along at least a portion of its length.

11. An inhaler according to claim 10, wherein the spiral wound element has an outer end that is connected to the housing and an inner end remote from the outer end, the stiffness of the spiral wound element decreasing towards at least a portion of the inner end.

12. An inhaler according to claim 11, wherein the thickness of the spiral wound element gradually reduces towards the inner end.

13. An inhaler according to claim 11 or 12, wherein the section of the spiral wound element gradually reduces towards the inner end.

14. An inhaler according to claim 11, wherein holes are formed in the spiral wound element close to its inner end.

15. An inhaler according to any preceding claim, wherein the spiral wound element is formed from phosphor bronze, stainless steel, nylon, acetal or polypropylene.

16. An inhaler according to any preceding claim wherein the spiral wound element is a coil spring.

17. An inhaler according to any of claims 1 to 16, wherein the housing comprises a first compartment to contain unused blisters and a second compartment to receive used blisters, the first and second compartments being

separated by a flexible or movable dividing wall.

18. An inhaler according to claim 17 comprising a passage between the first and second compartments, and blocking means in said passage to prevent the egress of powdered medicament from the first blister compartment into the second blister compartment through the passage.

19. An inhaler according to claim 18 wherein the blocking means is shaped to conform to the shape of the blister strip.

20. An inhaler according to claim 19 wherein said blocking means includes a resilient member to effect a seal against the blister strip.

21. An inhaler according to claim 20 wherein the blocking means is disposed such that it is aligned with a blister of the blister strip when another blister is aligned with said means for opening a blister.

22. An inhaler according to any preceding claim, including means to crush and/or tear opened blisters prior to entry into the spiral wound element.

23. An inhaler comprising a housing to receive a strip of blisters each containing a dose of medicament and means to sequentially move each blister into alignment with means for opening a blister to enable a user to inhale said dose, the inhaler having first compartment to contain unused blisters and a second compartment to receive used blisters, the first and second compartments being separated by a flexible or movable dividing wall.

24. An inhaler according to claim 23 , comprising an aperture in the dividing wall for the passage of the blister strip from the first compartment into the second compartment, said aperture including means to prevent the egress of powdered medicament from the used blister compartment into the unused blister compartment through the aperture.

25. An inhaler according to claim 24 wherein said means to prevent egress of powdered medicament includes a portion of the housing which is shaped to conform to the shape of the blister strip.

26. An inhaler according to claim 24 wherein said means to prevent egress of powdered medicament includes a resilient member to effect a seal against the blister strip.

27. An inhaler according to claim 26 wherein said resilient member is shaped to conform to the shape of the blister strip.

28. An inhaler according to claim 27 wherein the resilient member is formed integrally with the dividing wall.

29. An inhaler according to any of claims 24 – 28 wherein said means to prevent egress of powdered medicament is disposed such that it is aligned with a blister of the blister strip when another blister is aligned with said means for opening a blister.

30. An inhaler according to any of claims 24 - 29, wherein said means includes a brush or elastomeric element extending at least partially across the aperture in the dividing wall.

31. An inhaler according to any of claims 1 to 21, wherein the housing comprises a common chamber to receive both unused and used portions of the blister strip.

32. An inhaler according to claim 26, wherein the chamber is configured so that the used portion of the blister strip occupies a region of the chamber initially occupied by an unused portion of the blister strip as the size of the used portion of the strip increases.

33. An inhaler according to claim 32, wherein the common chamber is separated into a unused blister compartment and a used blister compartment by a flexible and/or movable dividing wall.

34. An inhaler according to claim 33, wherein the dividing wall is rigid but configured so as to be slidable within the housing so that the relative sizes of the unused and used blister compartments can be altered.

35. An inhaler according to claim 33, wherein the flexible and/or movable dividing wall is fixed to the housing at one or both ends.

36. An inhaler according to claim 33, wherein the dividing wall is movable and fixed to the housing at one end so as to pivot about said end within the housing.

37. An inhaler according to claim 33, wherein the dividing wall is flexible and configured so that it extends across said space between facing sidewalls of the inhaler to prevent passage of powdered dose between the unused and used blister compartments..

38. An inhaler according to claim 37, wherein the width of the flexible dividing wall in a direction extending between the sidewalls is greater than the distance between the sidewalls so that the flexible dividing wall is held in compression between the sidewalls.

39. An inhaler according to claim 36 and claims 37 or 38, wherein the flexible dividing wall comprises a foam strip.

40. An inhaler according to claim 39, wherein the foam strip includes a stiffening element.

41. An inhaler according to any of claims 33 to 40, wherein said flexible dividing wall is at least partially attached to the spiral wound element.

42. An inhaler according to any of claims 22 to 30, including means to crush, cut-up and/or tear a used portion of the blister strip.

43. An inhaler according to any of claims 1 to 22, comprising a second spiral wound element, the unused blister strip being coiled up within said second spiral wound element and located within the housing during assembly, the arrangement being such that, during use of the inhaler, the second spiral wound element retracts as the first spiral wound element expands, as the size of the coil formed from a used portion of the strip increases and the size of the coil formed from an unused portion of the strip decreases.

44. An inhaler comprising a housing to receive a strip of blisters each containing a dose of medicament and means to sequentially move each blister into alignment with means for opening a blister to enable a user to inhale said dose, wherein the housing comprises a common chamber to receive an unused blister strip and a used portion of that strip, wherein a flexible and/or movable dividing wall separates the chamber into an unused and a used blister compartment.

45. An inhaler according to any of claims 1 to 22, wherein the housing includes a common chamber to receive an unused blister strip and an a used portion of that strip, wherein a flexible and/or movable dividing wall separates the chamber into a used and unused blister compartment.

46. An inhaler according to claim 44 or claim 45, wherein the flexible dividing wall is fixed to the housing at both ends.

47. An inhaler according to any of claims 44 to 46, wherein the dividing wall is flexible and configured so that it extends across said space between sidewalls

of the inhaler to prevent passage of powdered dose between the unused and used blister compartments.

48. An inhaler according to claim 47, wherein the width of the flexible dividing wall is greater than the distance between the sidewalls so that the flexible dividing wall is held in compression between the sidewalls.

49. An inhaler according to any of claims 44 to 48, wherein the flexible dividing wall comprises a foam strip.

50. An inhaler according to claim 49, wherein the foam strip includes a stiffening element.

51. An inhaler according to claim 45 and to any of claims 46 to 50, when dependent on claim 45, comprising a second spiral wound element to receive an unused blister strip for insertion into the housing during assembly, the arrangement being such that the second spiral wound element retracts as the first spiral wound element expands as the size of the coil formed from a used portion of the strip increases and the size of the coil formed from an unused portion of the strip decreases.

52. An inhaler according to claim 1 or claim 45 and to any of claims 46 to 51, when dependent on claim 45, wherein the spiral wound element is configured so that it is partially unrolled or unwound by a used portion of a blister strip on initial contact of the leading edge of the used portion of the strip against the spiral wound element, prior to any substantial deformation of the used portion of the strip caused by the spiral wound element.

53. An inhaler according to claim 52, wherein the spiral wound element is configured so that it partially unrolls or unwinds across an inner wall forming part of the housing.

54. An inhaler according to claim 52 or 53, including means to steady the spiral wound element to prevent over-expansion as the length of the used portion of the strip received within the spiral wound element increases.

55. An inhaler according to claim 54, wherein said means is the flexible dividing wall separating the common chamber into unused and used blister compartments.

56. An inhaler according to claim 55, wherein the flexible dividing wall is at least partially attached to the spiral wound element.

57. An inhaler according to any preceding claim, wherein the spiral wound element is configured so that its diameter increases by a factor of at least 3 when filled with a used portion of a strip of blisters relative to when the spiral wound element is empty.

58. An inhaler according to any preceding claim, wherein the housing contains a coiled strip of blisters.

59. An inhaler according to claim 58, wherein at least some of the coiled strip of blisters have past the means for opening a blister to form a used portion, said used portion of the strip being coiled within said spiral wound element.

60. A method of controlling a strip of blisters within an inhalation device in which unused blisters are sequentially movable into alignment with means for opening a blister to enable a user to inhale said dose, the method including the step of feeding a used portion of the strip into a spiral wound element to coil said used portion of the strip.

61. A method according to claim 60, wherein the method includes the step of forming the spiral wound element such that it is partially unrolled or unwound by the used portion of the blister strip on initial contact of the leading edge of

the used portion of the blister strip against the spiral wound element prior to any substantial deformation of the used portion of the strip caused by the spiral wound element.

62. A method of forming a coiled strip of blisters for insertion into an inhalation device, the method including the steps of feeding an end of a strip of blisters into a spiral wound element such that the strip is coiled up within said spiral wound element.

63. A method according to claim 62, including the step of separating the coiled strip of blisters from the spiral wound element prior to insertion of the strip into the device.

64. An inhaler comprising a housing to receive a strip of blisters each containing a dose of medicament and means to sequentially move each blister into alignment with means for opening a blister to enable a user to inhale said dose, the housing including a chamber to receive used blisters and means to compress, crush, tear, cut-up and/or fold said used blisters.

65. An inhaler according to claim 64, including an indexing mechanism for advancing the blisters, the indexing mechanism including a wheel around which empty blisters are fed and which rotates in response to movement of an actuator to draw the blister strip through the device, wherein the wheel is positioned relative to a wall of the housing such that blister cavities are partially squashed between the indexing wheel and the wall as they pass around the indexing wheel.

66. An inhaler according to claim 65, wherein the indexing wheel comprises a plurality of pockets to receive blister cavities, the maximum depth of each pocket being less than the maximum depth of a blister cavity such that the cavities protrude from the pockets by a distance which is greater than a gap between a top of the pockets and said wall, such that the cavities are squashed as they pass through said gap.