Patent Claims

1. Inhaler for administration of a pulverulent medicament in the form of an inhalable substance, substance formulation or substance mixture from a blister cavity which is to be opened by piercing elements (11) and is mounted in a lower housing part (1) of a housing (2) which is composed of an upper housing part (6), which is in the form of a mouthpiece and has an inhalation channel (16), and the lower housing part (1), which has an air inlet opening (9), characterised in that the inhalation channel (16) of the upper housing part (6) has a unit (15) for dispersing the pulverulent medicament, which unit (15) is connected to the piercing elements (11), the upper housing part (6) being displaceable relative to the lower housing part (1) in order to open the blister cavity.

2. Inhaler according to claim 1, characterised in that the piercing elements (11) are disposed at a distance from the blister cavity in a position locked by at least one first clip connection (10) between the upper housing part (1) and the lower housing part (6) and, in a position defined by at least one second clip connection, they project into the opened blister cavity.

3. Inhaler according to claim 1 or 2, characterised in that each piercing element (11) has a triangular tip, one piercing element (11) being arranged in the region

of the inhalation channel (16) and one piercing element (11) being arranged offset laterally thereto.

4. Inhaler according to any one of claims 1 to 3, characterised in that the piercing elements (11) are made of a plastics material.

5. Inhaler according to any one of claims 1 to 4, characterised in that the piercing elements (11) are produced in one piece with the unit (15) for dispersion.

6. Inhaler according to any one of claims 1 to 3, characterised in that the piercing elements (11) are made of metal.

7. Inhaler according to claim 6, characterised in that the piercing elements (11) are punched out of a plate (12) made of metal and are bent at an acute angle to the plate (12) so that they point in the direction towards the blister cavity.

8. Inhaler according to claim 7, characterised in that the plate (12) is connected in a positive-locking and/or friction-locked manner to the unit (15) for dispersion.

9. Inhaler according to claim 1 or 2, characterised in that the lower housing part (1) has two opposing clip projections (4), and corresponding clip openings (5)

are let into the upper housing part (6) in different planes.

10. Inhaler according to claim 9, characterised in that the clip projections (4) are arranged at free ends of opposing locking arms (7).

11. Inhaler according to claim 9, characterised in that the clip openings (5) in the plane in which the blister cavity is opened are in the form of slots.

12. Inhaler according to claim 1 or 2, characterised in that the upper housing part (6) is mounted to be displaceable relative to the lower housing part (1).

13. Inhaler according to claim 1, 2 or 12, characterised in that an anti-twist means is arranged between the upper housing part (6) and the lower housing part (1).

14. Inhaler according to any one of claims 1 to 13, characterised in that the upper housing part (6) has a cylindrical or elliptical cross-section in which the lower housing part (1), which is cylindrical or elliptical in cross-section, is mounted and extends conically in the direction towards an air outlet opening (18), the air inlet opening (9) being formed on the free end face of the lower housing part (1).

15. Inhaler according to any one of claims 1 to 13, characterised in that the upper housing part and the lower housing part are each dish-shaped in cross-

section, the lower housing part being mounted in the upper housing part.

16. Inhaler according to claim 1, characterised in that the blister cavity containing the pulverulent medicament is arranged by the manufacturer in the bearing (3) of the housing (2).

17. Inhaler according to any one of claims 1 to 16, characterised in that the inhaler is provided with an air-tight outer packaging, in particular a film container.

18. Inhaler according to claim 1, characterised in that the medicament is stored in the blister cavity, viewed in the direction of flow, upstream of the unit (15) for dispersing the pulverulent medicament and passes through a central bore (17) of the unit (15) into the inhalation channel (16) of the mouthpiece, the unit (15) having at least one radial inflow opening (19) which communicates with a flow bore (20) that leads into the inhalation channel.

19. Inhaler according to claim 18, characterised in that the central bore (17) of the unit (15) is disposed in alignment with one of the piercing elements (11).

20. Inhaler according to claim 18, characterised in that the central bore (17) is surrounded by an annular space (24) through which air flows and into which the inflow opening (19) leads, the outer wall (26) of the

flow bore (20) overlapping an inner wall (25) of the annular space (24).

21. Inhaler according to claim 18 or 20, characterised in that two diametrally opposite inflow openings (19) are provided, the width of which is slightly greater than the diameter of the inner wall (25).

22. Inhaler according to claim 18 or 20, characterised in that there are provided at least two mutually offset inflow openings (19) which lead into flow channels on opposite sides of the unit (15) which communicate with one another.

23. Inhaler according to any one of claims 20 to 22, characterised in that the inner wall (25) has axial apertures (21) for the flow connection of the bore (15) with the flow bore (20).

24. Inhaler according to any one of claims 18 to 23, characterised in that the unit (15) has in its flow bore (20) a deflector plate (23) for the medicament.

25. Inhaler according to any one of claims 18 to 24, characterised in that the deflector plate (23) is fastened to a centering ring (29) inserted into the unit.

26. Inhaler according to any one of claims 1 to 25, characterised in that it is for single use.

What is claimed is:

1. Inhaler for administration of a pulverulent medicament in the form of an inhalable substance, substance formulation or substance mixture from a blister cavity comprising a housing composed of an upper housing part in the form of a mouthpiece and having an inhalation channel, and a lower housing part, which has an air inlet opening, wherein the blister cavity is mounted in the lower housing part of the housing and is opened by piercing elements and wherein the upper housing part has a unit for dispersing the pulverulent medicament which is a separate piece that is fixedly secured in the inhalation channel of the mouthpiece, said unit having a central bore extending therethrough, the medicament being stored in a blister cavity receivable in the lower housing part upstream of the unit such that, on inhalation through the upper housing part, medicament is discharged from the blister cavity and the lower housing part and passes through the central bore of the unit in the upper housing part, wherein said unit is connected to the piercing elements and in that the unit comprises a flow bore that leads into the inhalation channel and at least one tangential inflow openin g in communication with the flow bore, so that a cyclonic turbulent flow is produced in the flow bore prior to entry of the medicament into the inhalation channel, wherein in a first position the piercing elements are disposed at a distance from the blister cavity in a position locked by at least one first clip connection between the upper housing part and the lower housing part and, in a second position defined by at least one second clip connection, they project into the opened blister cavity.

2. Inhaler according to claim 1, wherein each piercing element has a triangular tip, one piercing element being arranged in the region of the inhalation channel and one piercing element being arranged offset laterally thereto.

3. Inhaler according to claim 1, wherein the piercing elements are made of a plastics material.

4. Inhaler according to claim 1, wherein the piercing elements and the unit for dispersion are one piece of material.

5. Inhaler according to claim 1, wherein the piercing elements are made of metal.

6. Inhaler according to claim 5, wherein the piercing elements project from a metal plate, wherein the plate and the piercing elements are made of a single plate of metal and the piercing elements are bent at an acute angle to the plate so that they point in the direction towards the blister cavity.

7. Inhaler according to claim 6, wherein the plate is connected in a positive-locking or friction-locked manner to the unit for dispersion.

8. Inhaler according to claim 1, wherein the lower housing part has two opposing clip projections, and corresponding clip openings are let into the upper housing part in different planes.

9. Inhaler according to claim 8, wherein the clip projections are arranged at free ends of opposing locking arms.

10. Inhaler according to claim 8, wherein one of the two clip openings is in a plane in which the blister cavity is opened and is in the form of a slot.

11. Inhaler according to claim 1, wherein the upper housing part is mounted to be displaceable relative to the lower housing part.

12. Inhaler according to claim 1, wherein that an anti-twist means is arranged between the upper housing part and the lower housing part.

13. Inhaler according to claim 1, wherein the upper housing part has a cylindrical or elliptical cross-section in which the lower housing part, which is cylindrical or elliptical in cross-section, is mounted and the upper housing part extends conically in the direction towards an air outlet opening, and the air inlet opening of the lower housing is located on a bottom of the lower housing part.

14. Inhaler according to claim 1, wherein the upper housing part and the lower housing part are each dish-shaped in cross-section, the lower housing part being mounted in the upper housing part.

15. Inhaler according to claim 1, wherein the blister cavity containing the pulverulent medicament is arranged in a bearing of the housing.

16. Inhaler according to claim 1, wherein the inhaler is provided with an air-tight outer packaging.

17. Inhaler according to claim 16, wherein the air-tight outer packaging is a film container.

18. Inhaler according to claim 1, wherein upon inhalation, air flows through an opening in the blister cavity and carries the medicament through the central bore of the unit into the inhalation channel of the mouthpiece, the unit having at least one radial inflow opening which communicates with the flow bore that leads into the inhalation channel.

19. Inhaler according to claim 18, wherein the central bore of the unit is disposed in alignment with one of the piercing elements.

20. Inhaler according to claim 18, wherein the central bore is surrounded by an annular space through which air flows and into which the inflow opening leads, the outer wall of the flow bore overlapping an inner wall of the annular space.

21. Inhaler according to claim 18, wherein two diametrally opposite inflow openings are provided, the width of which is slightly greater than the diameter of the inner wall.

22. Inhaler according to claim 18, wherein there are provided at least two mutually offset inflow openings which lead into flow channels on opposite sides of the unit which communicate with one another.

23. Inhaler according to claim 20, wherein the inner wall has axial apertures for the flow connection of the bore with the flow bore.

24. Inhaler according to claim 18, wherein the unit has in its flow bore a deflector plate for the medicament.

25. Inhaler according to claim 18, wherein the deflector plate is fastened to a centering ring inserted into the unit.

26. Inhaler according to claim 1, wherein it is for single use.

27. Inhaler for administration of a pulverulent medicament in the form of an inhalable substance, substance formulation or substance mixture from a blister cavity, comprising a housing composed of an upper housing part in the form of a mouthpiece and has an inhalation channel, and a lower housing part, said lower housing part having an air inlet opening, wherein said blister cavity is to be opened by piercing elements and is mounted in the lower housing part of the housing, wherein the inhalation channel of the upper housing part has a unit for dispersing the pulverulent medicament which is a separate piece that is fixedly secured in the inhalation channel of the mouthpiece, which unit is connected to the piercing elements, and wherein the medicament is stored in the blister cavity, upstream of the unit for dispersing the pulverulent medicament and passes through a central bore of the unit into the inhalation channel of the mouthpiece, the unit having at least one tangential inflow opening which communicates with a flow bore that leads into the inhalation channel wherein in a first position the piercing elements are disposed at a distance from the blister cavity in a position locked by at least one first clip connection between the upper housing part and the lower housing part and, in a second position defined by at least one second clip connection, they project into the opened blister cavity.

28. Inhaler according to claim 27, wherein each piercing element has a triangular tip, one piercing element being arranged in the region of the inhalation channel and one piercing element being arranged offset laterally thereto.

29. Inhaler according to claim 27, wherein the piercing elements are made of a plastics material.

30. Inhaler according to claim 27, wherein the piercing elements and the unit for dispersion are one piece of material.

31. Inhaler according to claim 27, wherein the piercing elements are made of metal.

32. Inhaler according to claim 31, wherein the piercing elements project from a metal plate, wherein the plate and the piercing elements are made of a single plate of metal and

the piercing elements are bent at an acute angle to the plate so that they point in the direction towards the blister cavity.

33. Inhaler according to claim 32, wherein the plate is connected in a positive-locking or friction-locked manner to the unit for dispersion.

34. Inhaler according to claim 27, wherein the lower housing part has two opposing clip projections, and corresponding clip openings are let into the upper housing part in different planes.

35. Inhaler according to claim 34, wherein in that the clip projections are arranged at free ends of opposing locking arms.

36. Inhaler according to claim 34, wherein one of the two clip openings is in a plane in which the blister cavity is opened and is in the form of a slot.

37. Inhaler according to claim 27, wherein the upper housing part is mounted to be displaceable relative to the lower housing part.

38. Inhaler according to claim 27, wherein an anti-twist means is arranged between the upper housing part and the lower housing part.

39. Inhaler according to claim 27, wherein the upper housing part has a cylindrical or elliptical cross-section in which the lower housing part, which is cylindrical or elliptical in cross-section, is mounted and the upper housing part extends conically in the direction towards an air outlet opening, and the air inlet opening of the lower housing is located on a bottom of the lower housing part.

40. Inhaler according to claim 27, wherein the upper housing part and the lower housing part are each dish-shaped in cross-section, the lower housing part being mounted in the upper housing part.

41. Inhaler according to claim 27, wherein the blister cavity containing the pulverulent medicament is arranged in a bearing of the housing.

42. Inhaler according to claim 27, wherein the inhaler is provided with an air-tight outer packaging.

43. Inhaler according to claim 42, wherein the air-tight outer packaging is a film container.

44. Inhaler according to claim 27, wherein upon inhalation, air flows through an opening in blister cavity and carries the medicament through the central bore of the unit into the inhalation channel of the mouthpiece, the unit having at least one radial inflow opening which communicates with the flow bore that leads into the inhalation channel.

45. Inhaler according to claim 44, wherein the central bore of the unit is disposed in alignment with one of the piercing elements.

46. Inhaler according to claim 44, wherein the central bore is surrounded by an annular space through which air flows and into which the inflow opening leads, the outer wall of the flow bore overlapping an inner wall of the annular space.

47. Inhaler according to claim 44, wherein two diametrally opposite inflow openings are provided, the width of which is slightly greater than the diameter of the inner wall.

48. Inhaler according to claim 44, wherein there are provided at least two mutually offset inflow openings which lead into flow channels on opposite sides of the unit which communicate with one another.

49. Inhaler according to claim 46, wherein the inner wall has axial apertures for the flow connection of the bore with the flow bore.

50. Inhaler according to claim 44, wherein the unit has in its flow bore a deflector plate for the medicament.

51. Inhaler according to claim 44, wherein the deflector plate is fastened to a centering ring inserted into the unit.

52. Inhaler according to claim 27, wherein it is for single use.