a number of piston rods 23, 24 which is equal to the number of carpules 9, 11. The piston rods 23, 24 form a composite structural unit.

It is also possible for at least one of the piston rods 23, 24 to be configured in the form of a hollow cylinder, and is formed as closed at an end region 25 that faces towards the distal end section 3. In this case, it would be possible, depending on the clear internal dimension of the piston rod 23, 24, for a first drive means 26 of the first drive module 13 to be arranged or accommodated in the at least one piston rod 23, 24 configured in the form of a hollow cylinder.

In addition to or independently of this, however, it would also be possible to provide an individual accommodation part 27 on the drive element 22, which, when seen in cross-section, is arranged laterally next to the piston rods 23, 24. The first drive means 26 to be arranged or accommodated inside this. It would also be possible, however, for a multiple arrangement of first drive means 26 to be provided, with which in each case a first drive means 26 is located both inside at least one of the piston rods 23, 24 as well as inside the accommodation part 27.

If the accommodation part 27 is provided, this forms a composite structural unit with the piston rods 23, 24. The drive element 22 can further comprise a connection part 28, by means of which the at least two piston rods 23, 24, and, if provided, also the accommodation part 27, are connected to one another to form a structural unit. Each of the piston rods 23, 24, and, if provided, also the accommodation part 27, exhibit respective end regions 29, wherein the mutual connection to form a structural unit takes place in the area of said end regions 29. Starting from the common connection part 28, the at least two piston rods 23, 24 and, as appropriate, the accommodation part 27 project from this in the distal direction (i.e. towards the ‘front’ of the device).

In order to save material and weight, it may be advantageous if the at least two piston rods 23, 24 and the accommodation part 27 of the drive element 22 are respectively configured in the form of hollow cylinders, and in each case are formed as closed in at first end regions 25 thereof which face towards the distal end section 3.

There are various different possibilities for holding the carpules 9, 11, on the drive element 22. The first possibility makes provision for only one of the pistons 10, 12 of a first of the at least two carpules 9, 11 to be coupled to the piston rod 23, 24

Claims

1. An autoinjector (1), comprising:

a distal end section (3) that, in use, is directed towards a patient (2) and a proximal end section (4) that faces away therefrom;

a carrying housing (5) comprising a distal end (6) and a proximal end (7);

an activation sleeve (8) surrounding a predominant part of a longitudinal extension of the carrying housing (5) and extending from the proximal end (7) in the direction towards the distal end (6), such that the distal end (6) of the carrying housing (5) projects beyond the activation sleeve (8), the activation sleeve (8) being moveable in relation to the carrying housing (5) in an axial direction;

a first carpule (9) positioned in the carrying housing (5), the first carpule (9) including a piston (10) that is adjustable in the axial direction and a medication for administration during an injection procedure;

a second carpule (11) positioned in the carrying housing (5), the second carpule (11) including a piston (12) that is adjustable in the axial direction and a medication for administration during an injection procedure, and when viewed in cross-section, the first carpule and second carpule (9, 11) are arranged next to one another in the carrying housing (5);

a first drive module (13) with a first drive means (26), the first drive module (13) being in drive connection with at least one of the first carpule and second carpule (9, 11), and being activatable by the activation sleeve (8);

a securing device (14) to secure the first drive module (13) in position relative to the carrying housing (5) until activation of the first drive module for the injection procedure; and

a needle arrangement (17) with at least one cannula (15, 16), the needle arrangement (17) being positioned in front of at least one of the first carpule and second carpule (9, 11) in the distal end section (3) such that ends (18, 19) of the at least one cannula (15, 16) are arranged inside the carrying housing (5),

wherein the first drive module (13) further comprises a drive element (22) arranged inside the carrying housing (5), the drive element (22) including a first piston rod and a second piston rod (23, 24) that form a composite structural unit;

wherein at least one of the first piston rod and second piston rod (23, 24) is a hollow cylinder that is closed at a first end section (25) that faces towards the distal end section (3);

wherein the first drive means (26) is arranged in the hollow cylinder of the at least one of the first piston rod and second piston rod (23, 24).

2. The autoinjector (1) according to claim 1, characterised in that each of the first and second carpules (9, 11) is arranged in a respective case in front of its own cannula (15, 16).

3. The autoinjector (1) according to any one of the preceding claims, characterised in that only one of the pistons (10) of a first carpule of the at least two carpules (9) is coupled to the piston rod (23) allocated to the piston (10), and wherein the other of the at least two carpules (11) is held by means of a holding device (30) to the first carpule (9).

4. The autoinjector (1) according to claim 1, characterised in that each of the first and second pistons (10, 12) is coupled to the respective first and second piston rod (23, 24), and the first and second carpules (9, 11) are held independently from one another on the drive element (22).

5. The autoinjector (1) according to any one of the preceding claims, characterised in that the carrying housing (5) comprises a front carrying housing part (31) with a front accommodation space (33) and a rear carrying housing part (32) with a rear accommodation space (34), and the two carrying housing parts (31, 32) can be connected to one another in a connection section (35) in the axial direction in two different longitudinal positions in a first connection setting and a second connection setting.

6. The autoinjector (1) according to claim 5, characterised in that the two carrying housing parts (31, 32) can be connected to one another in the connection section (35) by means of a coupling device (36).

7. The autoinjector (1) according to claim 5 or 6, characterised in that the rear carrying housing part (32) comprises at least two guide extensions (37) that project in the distal direction, the guide extensions (37) being supported by lying in contact on the front carrying housing part (31).

8. The autoinjector (1) according to any one of claims 5 to 7, characterised in that in the first connection setting the carrying housing parts (31, 32) exhibit a greater longitudinal extension in relation to the second connection setting.

9. The autoinjector (1) according to any one of claims 5 to 8, characterised in that the front carrying housing part (31) exhibits a longitudinal extension in the axial direction, which is selected in a value range with a lower limit of 60% and an upper limit of 95%, in particular with a lower limit of 70% and an upper limit of 85%, related to the total longitudinal extension of the two carrying housing parts (31) in the second connection setting.

10. The autoinjector (1) according to any one of claims 5-9, characterised in that the distal end (7) of the carrying housing (5), in particular the distal end (7) of the front carrying housing part (31), comprises a number of openings (38) that is equal to the number of cannulas (15, 16), wherein the openings (38) allow for the through passage of the distal ends (18) of the cannulas (15, 16), and in each case a puncturable sealing plug (39) is arranged in the openings (38) in a sealing position.

11. The autoinjector (1) according to any one of claims 5-10, characterised in that a sealing element (40) is provided, the sealing element (40) being arranged between the front carrying housing part (31) and the rear carrying housing part (32), and is formed running continuously over the circumference.

12. The autoinjector (1) according to claim 11, characterised in that the sealing element (40) comprises at the distal end section that faces towards the front carrying housing part (31), a sealing attachment (41), wherein the first connection setting of the two carrying housing parts (31) the sealing attachment (41) is arranged at a distance from a face surface (42) of the front carrying housing part (31), and, in the second connection setting of the two carrying housing parts (31, 32), the sealing attachment (41) is in sealing contact at the face surface (42) of the front carrying housing part (31).

13. The autoinjector (1) according to claim 12, characterised in that the sealing attachment (41) of the sealing element (40) is supported on a face surface (43) of the rear carrying housing part (32), facing towards the front carrying housing part (31), and that the sealing element (40) extends into contact with the rear carrying housing part (32).

14. The autoinjector (1) according to any one of claims 11 to 13, characterised in that the sealing element (40), in a storage setting of the device and with the carrying housing parts (31, 32) being in the second connection setting, is in sealing contact

over the full circumference both on the rear carrying housing part (32) and the drive element (22) arranged inside the housing part, in particular with a connection part (28) of the first drive module (13).

15. The autoinjector (1) according to any one of claims 5-14, characterised in that the carrying housing (5), in particular the rear carrying housing part (32), comprises at its distal end a transverse wall (46), with a latch engagement cut-out opening (47) arranged in it.

16. The autoinjector (1) according to claim 15, characterised in that the securing device (14) comprises at least one retention hook (44), the at least one retention hook (44) being arranged on the drive element (22), in particular the connection part (28) thereof and wherein, in the storage setting of the device, the at least one retention hook (44) is held in the latch engagement cut-out opening (47) of the transverse wall (46).

17. The autoinjector (1) according to claim 16, characterised in that the securing device (14) comprises a securing cap (48) with a securing pin (49), arranged in the distal end section (3), and wherein by means of the securing pin (49) the at least one retention hook (44) is held in a latch engaged setting when in the storage setting of the device.

18. The autoinjector (1) according to any one of claims 15-17, characterised in that the proximal end region of the activation sleeve (8) comprises a closure wall (50), at which a triggering means (51) is arranged, in particular a triggering opening, the triggering means (51) aligned in the axial direction flush in relation to the latch engagement cut-out opening (47) arranged in the transverse wall (46) of the carrying housing (5), in particular of the rear carrying housing part (32).