Claims

1. Housing part (3a, 3b) for a pneumatic clamping and/or braking device (10), the housing part (3a, 3b) comprising:
a first edge (100b) of the housing part (3a, 3b) and a second edge (100a) of the housing part (3a, 3b) opposite the first edge (100b);
an annular recess (11) arranged between the second edge (100a) and the first edge (100b) for clamping an annular spring plate (1a, 1b) between a first bearing surface (101) of the housing part (3a, 3b) defined by the recess (11) and a second bearing surface (102) of the housing part (3a, 3b) defined by the recess (11);
a clamping element (8) having a clamping surface (7) which is designed, when the spring plate (1a, 1b) is clamped in the recess (11) between the first bearing surface (101) and the second bearing surface (102) in such a way that a first end of the spring plate (1a, 1b) is supported on the first bearing surface (101) and a second end of the spring plate (1a, 1b) presses onto the second bearing surface (102), to transmit a clamping and/or braking force to an object (5) to be clamped and/or braked;
a first housing contact surface (12a) which extends between the first edge (100b) and the first bearing surface (101);
wherein at least one groove (110) for receiving a sealing means is arranged on the first housing contact surface (12a),
wherein the housing part (3a, 3b) has one, two or more ports (I, II) for applying a pressure medium to the housing part,
characterized in that
the at least one groove (110) is interrupted by one or more of the ports (I, II)
and/or
the at least one groove (110) on the first housing contact surface (12b) runs between the first edge (100b) of the housing part (3a, 3b) and one or more of the ports (I, II).

2. The housing part according to Claim 1, characterized in that the first housing contact surface (12a) furthermore has one or more holes (15) for fastening the housing part (3a) to another housing part (3b) by means of a fastening means (17).

3. The housing part according to Claim 2, characterized in that the at least one groove (110) on the first housing contact surface (12a) extends between the holes (15) and the first bearing surface (101).

4. The housing part according to Claim 2 or 3, characterized in that the holes (15) on the first housing contact surface (12a) are arranged between the first edge (100b) and the

at least one groove (110).

5. The housing part (3a, 3b) according to claim 1, characterized in that the groove (110) extends at least partially along an arc of a circle and/or the at least one groove (110) is designed to run at least partially around a centre point of the annular recess (11).

6. The housing part according to claim 1, characterized in that
the at least one groove (110), which runs on the first housing contact surface (12b) between the first edge (100b) of the housing part (3a, 3b) and one or more of the ports (I, II), runs at least partially around the ports.

7. The housing part (3a, 3b) according to claim 1, characterized in that the housing part (3a, 3b) is designed in such a way that, when the second end of the spring plate (1a, 1b) presses onto the second bearing surface (102), the housing part (3a, 3b) elastically deforms in the region of the clamping element and/or the second bearing surface (102) and thereby the clamping surface (7) transmits the clamping and/or braking force to the object (5) to be clamped and/or braked.

8. The housing part (3a, 3b) according to claim 1, characterized in that the housing part (3a, 3b) furthermore comprises: a second housing contact surface (12b) which extends between the second bearing surface (102) and the second edge (100b) of the housing part (3a, 3b).

9. The housing part (3a, 3b) according to Claim 8, characterized in that the annular recess (11) defines an annular opening (12) for inserting the spring plate (1a, 1b) into the housing part (3a, 3b), wherein the annular opening (12) is formed between the first housing contact surface (12a) and the second housing contact surface (12b).

10. The housing part (3a, 3b) according to claim 1, characterized in that the second bearing surface (102) and the clamping surface (7) are arranged on mutually opposite side surfaces of the clamping element (8), with a second housing contact surface (12b) arranged therebetween, and/or the clamping surface (7) is arranged at or on the second edge (100a).

11. The housing part (3a, 3b) according to claim 1, characterized in that the distance of the second bearing surface (102) from the second edge (100a) or the clamping surface (7) is smaller than the distance of the first bearing surface (101) from the second edge (100a) or the clamping surface (7), and/or the distance of the first bearing surface (101) from the first edge (100b) is smaller than the distance of the second bearing surface

(102) from the first edge (100b) and/or the second edge (100a) of the housing part (3a, 3b) is closer to the object (5) than the first edge (100b) in the state installed in the clamping and/or braking device and/or the second housing contact surface (12b) of the housing part (3a, 3b) is closer to the object (5) than the first housing contact surface (12a) in the state installed in the clamping and/or braking device.

12. Clamping and/or braking device (10) for clamping and/or braking an object (5) to be clamped and/or braked, comprising:
a housing (3) comprising a first housing part (3a) according to claim 1 and a second housing part (3b) according to claim 1,
wherein the two housing parts (3a, 3b) are arranged with respect to one another and fastened to one another in such a way that the first housing contact surface (12a) of the first housing part (3a) faces the first housing contact surface (12a) of the second housing part (3b), and that the recesses (11) of the first and second housing parts (3a, 3b) together form an interior space (13) within the housing (3);
wherein a sealing means is received in the respective groove (110) of each of the housing parts (3a, 3b);
a spring (1) which is arranged in the interior space (13) and comprises a first annular spring plate (1a) and a second annular spring plate (1b), wherein the spring plates (1a, 1b) are arranged within the interior space (13) in such a way that at least one pressure space (2, 4) is formed in the interior space (13), which pressure space is at least partially delimited by the spring plates (1a, 1b), wherein the pressure space (2, 4) can be aerated or deaerated and can be subjected to overpressure of a pressure medium which is suppliable to the housing (3),
wherein the first spring plate (1a) is clamped between the first bearing surface (101) of the first housing part (3a) and the second bearing surface (102) of the first housing part (3a);
wherein the second spring plate (1b) is clamped between the first bearing surface (101) of the second housing part (3b) and the second bearing surface (102) of the second housing part (3b); and
wherein the spring plates (1a, 1b) are arranged relative to the at least one pressure space (2, 4) in such a way that a bending of at least one of the spring plates (1a, 1b) is changeable by aerating or deaerating the pressure space (2, 4) or subjecting the pressure space (2, 4) to overpressure, and as a result the device (10) changes between an open state, in which the object (5) is spaced apart from the clamping surfaces (7), and a closed state, in which one or more of the clamping surfaces (7) transmit a clamping and/or braking force to the object (5).

13. Clamping and/or braking device (10) for clamping and/or braking an object (5) to be clamped and/or braked, comprising:

a housing (3) comprising a first housing part (3a) and a second housing part (3b),

wherein each of the housing parts (3a, 3b) comprises:

a first edge (100b) of the housing part (3a, 3b) and a second edge (100a) of the housing part (3a, 3b) opposite the first edge (100b);

an annular recess (11) arranged between the second edge (100a) and the first edge (100b) for clamping an annular spring plate (1a, 1b) between a first bearing surface (101) of the housing part (3a, 3b) defined by the recess (11) and a second bearing surface (102) of the housing part (3a, 3b) defined by the recess (11);

a clamping element (8) having a clamping surface (7) which is designed, when the spring plate (1a, 1b) is clamped in the recess (11) between the first bearing surface (101) and the second bearing surface (102) in such a way that a first end of the spring plate (1a, 1b) is supported on the first bearing surface (101) and a second end of the spring plate (1a, 1b) presses onto the second bearing surface (102), to transmit a clamping and/or braking force to an object (5) to be clamped and/or braked;

a first housing contact surface (12a) which extends between the first edge (100b) and the first bearing surface (101),

wherein at least one groove (110), in which a sealing means is received, is arranged on the first housing contact surface (12a),

and

wherein the two housing parts (3a, 3b) are arranged with respect to one another and fastened to one another in such a way that the first housing contact surface (12a) of the first housing part (3a) faces the first housing contact surface (12a) of the second housing part (3b), and that the recesses (11) of the first and second housing parts (3a, 3b) together form an interior space (13) within the housing (3);

a spring (1) which is arranged in the interior space (13) and comprises a first annular spring plate (1a) and a second annular spring plate (1b), wherein the spring plates (1a, 1b) are arranged within the interior space (13) in such a way that at least one pressure space (2, 4) is formed in the interior space (13), which pressure space is at least partially delimited by the spring plates (1a, 1b), wherein the pressure space (2, 4) can be aerated or deaerated and can be subjected to overpressure of a pressure medium which is suppliable to the housing (3),

wherein the first spring plate (1a) is clamped between the first bearing surface (101) of the first housing part (3a) and the second bearing surface (102) of the first housing part (3a);

wherein the second spring plate (1b) is clamped between the first bearing surface (101)

of the second housing part (3b) and the second bearing surface (102) of the second housing part (3b); and

wherein the spring plates (1a, 1b) are arranged relative to the at least one pressure space (2, 4) in such a way that a bending of at least one of the spring plates (1a, 1b) is changeable by aerating or deaerating the pressure space (2, 4) or subjecting the pressure space (2, 4) to overpressure, and as a result the device (10) changes between an open state, in which the object (5) is spaced apart from the clamping surfaces (7), and a closed state, in which one or more of the clamping surfaces (7) transmit a clamping and/or braking force to the object (5).

14. The clamping and/or braking device (10) according to Claim 12 or 13, wherein the two housing parts (3a, 3b) are fastened to one another by means of one or more fastening means (17) which are arranged in the holes (15).

15. The clamping and/or braking device (10) according to Claim 12 or 13, wherein the second housing contact surface (12b) of the first housing part (3a) faces the second housing contact surface (12b) of the second housing part (3b).

16. The clamping and/or braking device (10) according to Claim 12 or 13, wherein the at least one pressure space comprises a first pressure space (4) which is arranged outside the spring (1) between at least one of the spring plates (1a, 1b) and the housing (3).

17. The clamping and/or braking device (10) according to Claim 16, wherein the first spring plate (1a) is designed to reduce its bending by aerating the first pressure space (4) or by subjecting the first pressure space (4) to overpressure in order, when the first end of the first spring plate (1a) is supported on the first bearing surface (101) of the first housing part (3a), to press with the second end of the first spring plate (1a) onto the second bearing surface (102) of the first housing part (3a) in such a way that as a result a transmission of a clamping and/or braking force from the clamping surface (7) of the clamping element (8) of the first housing part (3a) to the object (5) to be clamped and/or braked is brought about and the device (10) changes from the open state to the closed state.

18. The clamping and/or braking device (10) according to Claim 16, wherein the second spring plate (1b) is designed to reduce its bending by aerating the first pressure space (4) or by subjecting the first pressure space (2, 4) to overpressure in order, when the first end of the second spring plate (1b) is supported on the first bearing surface (101) of the second housing part (3b), to press with the second end of the second spring plate

(1b) onto the second bearing surface (102) of the second housing part (3a) in such a way that as a result a transmission of a clamping and/or braking force from the clamping surface (7) of the clamping element (8) of the second housing part (3a) to the object (5) to be clamped and/or braked is brought about and the device (10) changes from the open state to the closed state.

19. The clamping and/or braking device (10) according to Claim 16, wherein the device (10) is designed in such a way that, by aerating the first pressure space (4) or by subjecting the first pressure space (4) to overpressure, the first bearing surface (101) and the second bearing surface (102) of at least one of the two housing parts (3a, 3b) move away from one another and/or the bending of at least one of the spring plates (1a, 1b) decreases, and as a result the device (10) changes from the open state to the closed state.

20. The clamping and/or braking device (10) according to Claim 12 or 13, wherein the at least one pressure space comprises a second pressure space (2), wherein the second pressure space (2) is arranged within the spring (1) between the two spring plates (1a, 1b), wherein the device (10) is designed in such a way that, by aerating the second pressure space (2) or by subjecting the second pressure space (2) to overpressure, the first bearing surface (101) and the second bearing surface (102) of at least one of the two housing parts (3a, 3b) move towards one another and/or the bending of at least one of the spring plates (1a, 1b) increases, and as a result the device (10) changes from the closed state to the open state.