Claims

1. A gripper (2; 4) for grasping an ophthalmic lens immersed in a liquid (L), in particular for a contact lens (CL) such as a soft contact lens, the gripper (2; 4) comprising:
- a housing (20; 40) having an opening (200; 400) arranged at the distal end of the housing (20; 40), the opening (200; 400) being in communication with an interior space (21, 210; 41, 410) defined by the housing (20; 40) and being sized to allow the ophthalmic lens to pass therethrough,
- suction means (30, 23; 30, 43) for generating suction in the interior space (21, 210; 41, 410) of the housing (20; 40) to allow the ophthalmic lens together with an amount of the liquid (L) in which the ophthalmic lens is immersed to be sucked through the opening (200; 400) into the interior space (21, 210; 41, 410) of the housing (20; 40), and
- pressure means (30, 23; 30, 43) for generating positive pressure in the interior space (21, 210; 41, 410) of the housing (20; 40) so as to allow the ophthalmic lens together with the amount of liquid to be released from the interior space (21, 210; 41, 410) through the opening (200; 400) at the distal end of the housing (20; 40).

2. The gripper according to claim 1, wherein the suction means and the pressure means comprise a supply channel (30) for supplying underpressure or overpressure, respectively, the supply channel (30) being in communication with the interior space (21; 41) of the housing at a proximal end portion of the housing (20; 40).

3. The gripper according to claim 2, wherein the supply channel for supplying the underpressure and the supply channel for supplying the overpressure together form a common supply channel (30) for supplying the underpressure or the overpressure through the common supply channel (30).

4. The gripper according to any one of the preceding claims, wherein the suction means and the pressure means comprise a piston (23; 43) movably arranged in the interior space (21; 41) of the housing (20; 40) between a distal end position of the piston and a proximal end position of the piston (23; 43).

5. The gripper according to claim 4, wherein the supply channel for supplying the underpressure and the supply channel for supplying the overpressure, or the common supply channel (30), respectively, are arranged to allow the underpressure or the overpressure to be supplied to the interior space (21; 41) of the housing (20; 40) at a location proximal to the proximal end position of the piston (23; 43), so as to allow the piston to be moved towards its proximal end position upon supplying underpressure to cause the piston to generate the suction in the interior space (210; 410) of the housing (20; 40) and to allow the piston (23; 43) to be moved towards its distal end position upon supplying overpressure to cause the piston (23; 43) to generate the positive pressure in the interior space (210; 410) of the housing (20; 40).

6. The gripper according to any one of the preceding claims, further comprising a screen (22; 42) arranged in the interior space (21, 210; 41, 410) of the housing (20; 40), the screen (22; 42) being arranged to retain the ophthalmic lens in the interior space (210; 410) of the housing (20; 40) on that side of the screen (22; 42) facing the opening (200; 400) at the distal end of the housing (20; 40).

7. The gripper according to any one of the preceding claims, wherein the housing (20) at its distal end has a conical outer shape tapering towards the distal end.

8. The gripper according to any one of claims 1 to 6, wherein the opening (400) at the distal end of the housing (40) comprises a conically inwardly tapering portion (401).

9. A method for grasping an ophthalmic lens immersed in a liquid (L), in particular a contact lens (CL) such as a soft contact lens, the method comprising the steps of:
- providing a gripper (2; 4) comprising a housing (20; 40) having an opening (200; 400) arranged at the distal end of the housing (20; 40), the opening (200; 400) being in communication with an interior space (21, 210; 41, 410) defined by the housing (20; 40) and being sized to allow the ophthalmic lens to pass therethrough,
- generating suction in the interior space (21, 210; 41, 410) of the housing (20; 40) causing the ophthalmic lens together with an amount of the liquid (L) in which the ophthalmic lens is immersed to be sucked through the opening (200; 400) into the interior space (21, 210; 41, 410) of the housing (20; 40), and

- generating positive pressure in the interior space (21, 210; 41, 410) of the housing (20; 40) causing the ophthalmic lens together with the amount of liquid (L) to be released from the interior space (21, 210; 41, 410) through the opening (200; 400) at the distal end of the housing (20; 40).

10. The method according to claim 9, further comprising the step of supplying underpressure or overpressure, respectively, to a proximal end portion of the interior space (21, 210; 41, 410) of the housing (20; 40) to generate the suction or the positive pressure, respectively.

11. The method according to claim 9 or 10, wherein the step of providing a gripper comprises providing a gripper (2, 4) having a piston (23; 43) movably arranged in the interior space (21; 41) of the housing (20; 40) between a distal end position of the piston (23; 43) and a proximal end position of the piston (23; 43), wherein the step of generating suction in the interior of the housing comprises moving the piston (23; 43) towards its proximal end position, and wherein the step of generating positive pressure in the interior of the housing comprises moving the piston (23; 43) towards its distal end position.

12. The method according to claim 11, wherein supplying underpressure to the proximal end portion of the interior space (21; 41) of the housing causes the piston (23; 43) to move towards its proximal end position and wherein supplying overpressure to the proximal end portion of the interior space of the housing causes the piston (23; 43) to move towards its distal end position.

13. The method according to any one of claims 9 to 12, wherein the step of providing a gripper comprises providing a gripper (2, 4) having a screen (22; 42) arranged in the interior space (21, 210; 41, 410) of the housing (20; 40) to retain the ophthalmic lens in the interior space (210; 410) of the housing (20; 40) on that side of the screen (22; 42) facing the opening (200; 400) at the distal end of the housing (20; 40).

14. The method according to any one of claims 9 to 13, wherein the ophthalmic lens prior to being grasped is arranged in the liquid (L) in a container (1) having an elongated tubular body (10), the container comprising a diaphragm (11) having flexible fins (110) extending from the tubular body (10) towards the central axis (12) of the body (10) to retain the ophthalmic lens in the container (1), and wherein the housing (20) of the gripper (2) at its distal end has a conical

outer shape tapering towards the distal end, the method further comprising moving the distal end of the gripper (2) through the diaphragm (11) to flex the fins (110) away and make them rest against the conically shaped distal end of the housing (20) prior to generating suction in the interior space (21; 210) of the housing (20).

15. The method according to any one of claims 9 to 13, wherein the ophthalmic lens prior to being grasped is arranged in the liquid (L) in a container (1) having an elongated tubular body (10), the container comprising a diaphragm (11) having flexible fins (110) extending from the tubular body (10) towards the central axis (12) of the body (10), and wherein the opening (400) at the distal end of the gripper (4) comprises a conically inwardly tapering portion (401), the method further comprising moving the distal end of the gripper (4) into the liquid in the container (1) to a position close to the diaphragm (11) and then generating the suction in the interior space (41; 410) of the housing (40) to flex the fins (110) and make them rest against the conically inwardly tapering portion (401) to allow the lens to be sucked through the opening (400) into the interior space (41; 410) of the housing (40).

The invention claimed is:

1. A gripper for grasping an ophthalmic lens immersed in a liquid, the gripper comprising:
a housing having an opening arranged at the distal end of the housing, the opening being in communication with an interior space defined by the housing and being sized to allow the ophthalmic lens to pass therethrough, a supply channel for generating underpressure in the interior space of the housing to allow the ophthalmic lens together with an amount of the liquid in which the ophthalmic lens is immersed to be sucked through the opening into the interior space of the housing, and a supply channel for generating overpressure in the interior space of the housing so as to allow the ophthalmic lens together with the amount of liquid to be released from the interior space through the opening at the distal end of the housing; wherein the supply channel for generating underpressure and the supply channel for generating overpressure are in communication with the interior space of the housing at a proximal end portion of the housing; and further comprising a piston movably arranged in the interior space of the housing between a distal end position of the piston and a proximal end position of the piston.

2. The gripper according to claim **1**, wherein the supply channel for supplying the underpressure and the supply channel for supplying the overpressure together form a common supply channel for supplying the underpressure or the overpressure through the common supply channel.

3. The gripper according to claim **2**, further comprising a screen arranged in the interior space of the housing, the screen being arranged to retain the ophthalmic lens in the interior space of the housing on that side of the screen facing the opening at the distal end of the housing.

4. The gripper according to claim **2**, wherein the housing at its distal end has a conical outer shape tapering towards the distal end.

5. The gripper according to claim **2**, wherein the opening at the distal end of the housing comprises a conically inwardly tapering portion.

6. The gripper according to claim **1**, wherein the supply channel for supplying the underpressure and the supply channel for supplying the overpressure are arranged to allow the underpressure or the overpressure to be supplied to the interior space of the housing at a location proximal to the proximal end position of the piston, so as to allow the piston to be moved towards its proximal end position upon supplying underpressure to cause the piston to generate the underpressure in the interior space of the housing and to allow the piston to be moved towards its distal end position upon supplying overpressure to cause the piston to generate the overpressure in the interior space of the housing.

7. The gripper according to claim **1**, further comprising a screen arranged in the interior space of the housing, the screen being arranged to retain the ophthalmic lens in the interior space of the housing on that side of the screen facing the opening at the distal end of the housing.

8. The gripper according to claim **1**, wherein the housing at its distal end has a conical outer shape tapering towards the distal end.

9. The gripper according to claim **1**, wherein the opening at the distal end of the housing comprises a conically inwardly tapering portion.

10. A method for grasping an ophthalmic lens immersed in a liquid, the method comprising the steps of:
providing a gripper comprising a housing having an opening arranged at the distal end of the housing, the opening being in communication with an interior space defined by the housing and being sized to allow the ophthalmic lens to pass therethrough, generating underpressure in the interior space of the housing causing the ophthalmic lens together with an amount of the liquid in which the ophthalmic lens is immersed to be sucked through the opening into the interior space of the housing, and generating overpressure in the interior space of the housing causing the ophthalmic lens together with the amount of liquid to be released from the interior space through the opening at the distal end of the housing; and wherein the gripper further comprises a piston movably arranged in the interior space of the housing between a distal end position of the piston and a proximal end position of the

piston, wherein the step of generating underpressure in the interior of the housing comprises moving the piston towards its proximal end position, and wherein the step of generating overpressure in the interior of the housing comprises moving the piston towards its distal end position.

11. The method according to claim **10**, further comprising the step of supplying underpressure or overpressure, respectively, to a proximal end portion of the interior space of the housing to generate the underpressure or the overpressure, respectively.

12. The method according to claim **10**, wherein supplying underpressure to the proximal end portion of the interior space of the housing causes the piston to move towards its proximal end position and wherein supplying overpressure to the proximal end portion of the interior space of the housing causes the piston to move towards its distal end position.

13. The method according to claim **10**, wherein the gripper further comprises a screen arranged in the interior space of the housing to retain the ophthalmic lens in the interior space of the housing on that side of the screen facing the opening at the distal end of the housing.

14. The method according to claim **10**, wherein the ophthalmic lens prior to being grasped is arranged in the liquid in a container having an elongated tubular body, the container comprising a diaphragm having flexible fins extending from the tubular body towards the central axis of the body to retain the ophthalmic lens in the container, and wherein the housing of the gripper at its distal end has a conical outer shape tapering towards the distal end, the method further comprising moving the distal end of the gripper through the diaphragm to flex the fins away and make them rest against the conically shaped distal end of the housing prior to generating underpressure in the interior space of the housing.

15. The method according to claim **10**, wherein the ophthalmic lens prior to being grasped is arranged in the liquid in a container having an elongated tubular body, the container comprising a diaphragm having flexible fins extending from the tubular body towards the central axis of the body, and wherein the opening at the distal end of the gripper comprises a conically inwardly tapering portion, the method further comprising moving the distal end of the gripper into the liquid in the container to a position close to the diaphragm and then generating the underpressure in the interior space of the housing to flex the fins and make them rest against the conically inwardly tapering portion to allow the lens to be sucked through the opening into the interior space of the housing.