

CLAIMS:

1. Method for transporting a blister strip (1) of ophthalmic lenses, in particular contact lenses or intraocular lenses, into an autoclave magazine (2), the method comprising the steps of:
- providing a first gripper (3) for gripping blister strips, the first gripper (3) comprising two gripper units (31, 32), each of the two gripper units (31, 32) being configured to separately grip one individual blister strip (1),
 - providing an autoclave magazine (2) comprising two magazine compartments (21, 22), each of the two magazine compartments (21, 22) being configured to contain individual blister strips (1) in a manner stacked one above the other,
 - at a start location (4) providing at least one blister strip (1),
 - picking up the at least one blister strip (1) provided at the start location (4) using the first gripper (3),
 - moving the first gripper (3) together with the at least one blister strip (1) picked up at the start location (4) to a destination location, and
 - releasing the at least one blister strip (1) from the first gripper (3) at the destination location,
- wherein n is a positive integer including zero and indicates the number of blister strips actually contained in at least one of the two magazine compartments (21, 22) of the autoclave magazine (2),
- wherein either the two magazine compartments (21, 22) both contain n blister strips or one magazine compartment (21, 22) contains n blister strips while the other magazine compartment (22, 21) contains $n+1$ blister strips,
- wherein the at least one blister strip (1) is picked up at the start location (4) by the gripper units (31, 32) of the first gripper (3) and is transported to the magazine compartments (21, 22), either directly by moving the first gripper (3) to the magazine compartments (21, 22) as destination location, or indirectly by providing a hand-over station (5) and a second gripper (6) for gripping blister strips (1) and moving the first gripper (3) to the hand-over station (5) as the destination location and releasing the at least one blister strip (1) from the first gripper (3) into the hand-over station (5) and by subsequently transporting the

at least one blister strip (1) from the hand-over station (5) to the magazine compartments (21, 22) using the second gripper (6),

wherein in case only one single blister strip (1) is provided at the start location (4) and one magazine compartment of the two magazine compartments (21, 22) contains n blister strips while the other magazine compartment contains $n+1$ blister strips,

the single blister (1) strip is picked up at the start location (4) by one of the gripper units (31, 32) of the first gripper (3) and is transported into that magazine compartment (21, 22) containing the n blister strips, either directly by moving the first gripper (3) to that magazine compartment containing the n blister strips and releasing the single blister strip (1) from the first gripper (3) into that magazine compartment, or indirectly by moving the first gripper (3) to the hand-over station (5) and releasing the single blister strip (1) from the first gripper (3) into the hand-over station (5) and subsequently transporting the single blister strip (1) from the hand-over station (5) into that magazine compartment containing the n blister strips using the second gripper (6).

2. Method according to claim 1,

wherein each gripper unit of the two gripper units (31, 32) of the first gripper (3) is either fixedly assigned to a respective magazine compartment position corresponding to the location where one magazine compartment of the two magazine compartments (21, 22) of the autoclave magazine (2) is arranged, with one gripper unit of the first gripper (3) being fixedly assigned to the magazine compartment position of one of the two magazine compartments (21, 22) and the other gripper unit of the first gripper (3) being fixedly assigned to the magazine compartment position of the other of the two magazine compartments (21, 22),

or wherein each gripper unit of the two gripper units (31, 32) of the first gripper (3) is fixedly assigned to a respective hand-over position out of two hand-over positions (51, 52) in the hand-over station (5), with one hand-over position of the two hand-over positions (51, 52) being fixedly assigned to the magazine compartment position of one of the two magazine compartments (21, 22) and the other hand-over position of the two hand-over positions (51, 52) being fixedly

assigned to the magazine compartment position of the other of the two magazine compartments (21, 22),

and wherein in case only one single blister strip (1) is provided at the start location (4) and one magazine compartment of the two magazine compartments (21, 22) contains n blister strips while the other magazine compartment contains $n+1$ blister strips,

the single blister strip (1) is picked up at the start location (4) by that gripper unit which is fixedly assigned to the magazine compartment position corresponding to the location of the magazine compartment containing the n blister strips or to the hand-over position which is fixedly assigned to the magazine compartment position of the magazine compartment containing the n blister strips, and is transported into that magazine compartment containing the n blister strips, either directly by moving the first gripper (3) to the magazine compartment position corresponding to the location of the magazine compartment containing the n blister strips and releasing the single blister strip (1) from the first gripper into that magazine compartment, or indirectly by moving the first gripper (3) to the hand-over position fixedly assigned to the magazine compartment position of the magazine compartment containing the n blister strips and releasing the single blister strip (1) from the first gripper (3) into the hand-over station (5) at that hand-over position and by subsequently transporting the single blister strip (1) from that hand-over position in the hand-over station (5) into the magazine compartment containing the n blister strips using the second gripper (6).

3. Method according to claim 1,

wherein the start location (4) has two pick-up positions (41, 42) where blister strips (1) can be provided, and wherein each gripper unit of the two gripper units (31, 32) of the first gripper (3) is fixedly assigned to one of the two pick-up positions (41, 42), with one gripper unit being fixedly assigned to one pick-up position of the two pick-up positions (41, 42) and the other gripper unit being fixedly assigned to the other pick-up position of the two pick-up positions (41, 42),

and wherein in case only one single blister strip (1) is provided at the start location (4) at one of the two pick-up positions (41, 42) and one magazine

compartment of the two magazine compartments (21, 22) contains n blister strips while the other magazine compartment contains $n+1$ blister strips, the single blister strip (1) is picked up at the said one of the two pick-up positions (41, 42) by the gripper unit fixedly assigned to the said one of the two pick-up positions (41, 42) and is transported into the magazine compartment containing the n blister strips either directly by moving the first gripper (3) to the magazine compartment containing the n blister strips as the destination location and releasing the single blister strip (1) from the first gripper (3) into that magazine compartment, or indirectly by moving the first gripper (3) to the hand-over station (5) and releasing the single blister strip (1) from the first gripper (3) into the hand-over station (5) at a hand-over position fixedly assigned to the magazine compartment containing the n blister strips and by subsequently transporting the single blister strip (1) from the hand-over position into that magazine compartment using the second gripper (6).

4. Method according to any one of the preceding claims,

wherein in case only one single blister strip (1) is provided at the start location (4) and both of the two magazine compartments (21, 22) contain n blister strips,

the single blister strip (1) is picked up at the start location (4) by one of the two gripper units (31, 32) of the first gripper (3), and is transported into one of the two magazine compartments (21, 22), either directly by moving the first gripper (3) to the magazine compartments (21, 22) and releasing the single blister strip (1) from the first gripper (3) into one of the two magazine compartments (21, 22), or indirectly by moving the first gripper (3) to the hand-over station (5) and releasing the single blister strip (1) from the first gripper (3) into the hand-over station (5) and by subsequently transporting the single blister strip (1) from the hand-over station (5) into one of the two magazine compartments (21, 22) using the second gripper (6).

5. Method according to any one of the preceding claims,

wherein in case two blister strips (1) are provided at the start location (4) and one magazine compartment of the two magazine compartments (21, 22) contains n blister strips while the other magazine compartment contains $n+1$

blister strips, the two blister strips (1) are both picked up at the start location (4) by the two gripper units (31, 32) of the first gripper (3), one blister strip by one gripper unit and the other blister strip by the other gripper unit of the two gripper units (31, 32), and are transported into the two magazine compartments (21, 22), either directly by moving the first gripper (3) to the two magazine compartments (21, 22) and releasing the two blister strips (1) from the gripper units (31, 32) of the first gripper (3) into the two magazine compartments (21, 22), one blister strip into each magazine compartment, or indirectly by moving the first gripper (3) to the hand-over station (5) and releasing each of the two blister strips (1) from the first gripper (3) into the hand-over station (5), one blister strip into one hand-over position of two hand-over positions (51, 52) in the hand-over station (5) and the other blister strip into the other hand-over position of the two hand-over positions (51, 52), and by subsequently transporting the two blister strips (1) from the two hand-over positions (51, 52) in the hand-over station (5) into the two magazine compartments (21, 22), one blister into each of the two magazine compartments (21, 22), using the second gripper (6).

6. Method according to any one of the preceding claims,

wherein in case two blister strips (1) are provided at the start location (4) and both of the two magazine compartments (21, 22) contain n blister strips, the two blister strips (1) are both picked up at the start location (3) by the two gripper units (31, 32) of the first gripper (3), one blister strip by one gripper unit and the other blister strip by the other gripper unit of the two gripper units (31, 32), and are transported into the two magazine compartments (21, 22), either directly by moving the first gripper (3) to the two magazine compartments (21, 22) and releasing the two blister strips (1) from the gripper units (31, 32) of the first gripper (3) into the two magazine compartments (21, 22), one blister strip into each magazine compartment, or indirectly by moving the first gripper (3) to the hand-over station (5) and releasing the two blister strips (1) from the first gripper (3) into the hand-over station (5), one blister strip into one hand-over position of two hand-over positions (51, 52) in the hand-over station (5) and the other blister strip into the other hand-over position of the two hand-over positions (51, 52), and by subsequently transporting the two blister strips (1) from the two hand-over positions (51, 52) in the hand-over station (5) into the two magazine

compartments (21, 22), one blister strip into each of the two magazine compartments (21, 22), using the second gripper (6).

7. Method according to any one of the preceding claims,

5 wherein providing an autoclave magazine (2) comprises providing an autoclave magazine (2) having a packing axis, the two magazine compartments (21, 22), a loading opening (23) and a common compartment bottom (24) arranged normal to and movable along the packing axis, and

10 wherein, prior to releasing blister strips (1) into the two magazine compartments (21, 22) of the autoclave magazine (2), the compartment bottom (24) is moved to an uppermost position at the loading opening (23), and only then the blister strips (1) are transported to and released into the magazine compartments (21, 22), and

15 wherein each time either two blister strips are released into the two magazine compartments (21, 22), one blister strip into one of the two magazine compartments and the other blister strip into the other magazine compartment of the two magazine compartments or

20 each time only one single blister strip is released into one of the magazine compartments, when both of the two magazine compartments (21, 22) contain the same number m of blister strips, with m being a positive integer excluding zero and being less than a maximum number of blister strips to be accommodated in each of the magazine compartments (21, 22),

25 the compartment bottom (24) is moved away from the loading opening (23) along the packing axis by one step to allow for additional blister strip(s) (1) to be released into the magazine compartments (21, 22).

8. Method according to claim 7, wherein

30 the method comprises providing an autoclave magazine mask (25) arranged at the loading opening (23) of the autoclave magazine (2), the autoclave magazine mask (25) being capable of being opened and closed and,

 after having released into the two magazine compartments a predefined number of blister strips which is less than the maximum number of blister strips to be accommodated in the two magazine compartments (21, 22), the autoclave magazine mask (25) is closed, the compartment bottom (24) is then moved

towards the autoclave magazine mask (25) to compress the stacked blister strips contained in the magazine compartments (21, 22), and the autoclave magazine mask (25) is then opened again to allow for additional blister strips to be released from the first gripper (3) or the second gripper (6) into the magazine compartments (21, 22) of the autoclave magazine (2) ,

wherein the closed autoclave magazine mask (25) covers at least a portion of the loading opening (23) for allowing a respective uppermost blister strip of the stacked blister strips accommodated in the magazine compartments to abut against the autoclave magazine mask (25) as the compartment bottom (24) is moved towards the autoclave magazine mask (25).

9. Method according to claim 8,

wherein after the compartment bottom (24) has been moved towards the autoclave magazine mask (25) to compress the stacked blister strips contained in the magazine compartments (21, 22), the compartment bottom (24) is moved away from the autoclave magazine mask (25) again, and the autoclave magazine mask (25) is opened to allow additional blister strips (1) to be released into the magazine compartments (21, 22) of the autoclave magazine (2) with the aid of the first gripper (3) or the second gripper (6).

10. Method according to claim 8 or claim 9,

wherein providing an autoclave magazine (2) comprises providing an autoclave magazine (2) comprising a separation web (26) extending along the packing axis, the separation web (26) separating the interior of the magazine into the two magazine compartments (21, 22), and wherein the compartment bottom (24) comprises a slot (27) for receiving the separation web (26), and wherein moving the compartment bottom (24) along the packing axis comprises moving the slot (27) of the compartment bottom (24) along the separation web (26).

11. Method according to any one of the preceding claims, wherein transporting the blister strips (1) using the first gripper (3) or the second gripper (6) comprises the steps of

- providing the first gripper (3) or the second gripper (6) with gripping heads (33, 61), the gripping heads (33, 61) each having a bearing surface and at least one opening in the respective bearing surface,
 - picking the blister strip(s) (1) up with the first gripper (3) or the second gripper (6) by positioning the gripping heads (33, 61) of the first gripper (3) or the second gripper (6) above the blister strip(s) (1), by placing the respective bearing surfaces closely adjacent to the blister strip (1), and by applying underpressure through the opening in the respective bearing surface so as to cause the blister strip(s) (1) to adhere to the respective bearing surface,
 - moving the first gripper (3) or the second gripper (6) together with the blister strip(s) (1) adhered to the bearing surface to a desired location, and
 - releasing the blister strip(s) (1) from the bearing surface at the desired location by applying overpressure through the opening in the respective bearing surface.
12. Method according to claim 11, wherein the method comprises providing a first gripper (3) or second gripper (6) further having a detection opening in the respective bearing surface, and applying a separate underpressure through the detection opening in the respective bearing surface in order to detect whether or not a blister strip (1) is adhered to the respective bearing surface.