Claims

1. Apparatus for transporting contact lenses through dipping baths, the apparatus comprising a plurality of containers each for accommodating one contact lens, the containers capable of enabling a flow of one or more treatment fluids into and out of the container, and a plurality of carriers to hold the containers during transport through the dipping baths, and further comprising lifters to automatically lower and raise the carriers in a reciprocating manner along a transport path through the dipping baths, such that a portion of each container which holds a contact lens remains immersed in the treatment fluid contained in the dipping bath while the container held by the carrier is transported through the dipping baths from a starting end to a leaving end thereof.

2. Apparatus according to claim 1, wherein the lifters are mounted at the longitudinal sides of a housing of each dipping bath.

3. Apparatus according to claim 2, wherein the lifters comprise a guide bar at each longitudinal side of the housing of a dipping bath for slidingly supporting longitudinal ends of the carriers.

4. Apparatus according to claim 3, wherein the guide bars at their supporting faces each are provided with a longitudinally extending groove for accommodating a corresponding cam at each longitudinal end of the carriers.

5. Apparatus according to claim 3 or 4, wherein the guide bars each are connected with a lever which is capable of being reciprocatingly lowered and raised.

6. Apparatus according to claim 5, wherein the levers are connected with an electric drive and are reciprocatingly lowered and raised with a stroke which is adjustable.

7. Apparatus according to claim 6, wherein the stroke is adjustable from 2 mm to 20 mm, preferably 6 mm to 15 mm, most prefered 10 mm to 12 mm.

8. Apparatus according to claim 6 or 7, wherein the electric drive is controlled for a continuous revolution and the stroke is mechanically adjustable.

9. Apparatus according to claim 6 or 7, wherein the stroke of the levers is adjustable by control of a degree of a reciprocating forward and backward revolution of the electric drive.

10. Apparatus according to any one of the preceding claims, further comprising an automatically operating transfer means for the carriers from one dipping bath to the next dipping bath along the transport path.

11. Apparatus according to claim 10, wherein the transfer means is a pair of transversally spaced transfer wheels with starlike arranged radial slots for receiving longitudinal ends of the carriers.

12. Apparatus according to any one of the preceding claims, wherein each carrier along its length is adapted for receiving side by side a number of containers, each accommodating an individual contact lens.

13. Method for transporting contact lenses through dipping baths, comprising the steps of individually accommodating contact lenses in respective containers which are capable of enabling a flow of one or more treatment fluids into and out of the container, holding the containers in carriers, advancing the containers through the dipping baths, subjecting the carriers for the containers to a reciprocating lowering and raising motion along the transport through the dipping baths, wherein a portion of each container which accommodates a contact lens remains immersed in the treatment fluid contained in the dipping bath while the container held by the carrier is transported through the dipping baths from a starting end to a leaving end thereof.

14. Method according to claim 13, wherein at the starting end of a dipping bath the containers suspended from the carriers are first lowered into the treatment fluid.

15. Method according to claim 14, wherein a translational and vertical movement of the carriers is controlled such, that a path of the containers follows approximately a sinus curve.

16. Method according to any one of claims 13 to 15, wherein the translational transport of the containers through the dipping baths and the lowering and raising, respectively, thereof are accomplished sequentially.

17. Method according to any one of claims 13 to 16, wherein the contact lenses are transported through a number of successively arranged dipping baths with treatment fluid and the carriers holding the containers for the contact lenses are transferred from one dipping bath to the next one such, that the containers due to gravity are suspended from the carriers with their bottoms extending vertically towards the dipping baths.

18. Method according to any one of claims 13 to 17, wherein dipping bath accomplishes one or more of rinsing, extraction, coating or loading of the contact lenses.

19. Method according to any one of claims 13 to 18, wherein the transport of the contact lenses through each dipping bath is accomplished stepwise.

20. Method according to any one of claims 13 to 19, wherein the transport of the carriers through each dipping bath is accomplished by endless conveyor belts or chains provided at the longitudinal sides of a housing of the dipping bath and equipped along their circumference with pusher dogs protruding therefrom for engaging with longitudinal ends of the carriers, the pusher dogs having a length which is greater than a maximum distance as measured from a lowest position of the carrier to a highest position of the carrier.

Claims

1. Method for transporting contact lenses through dipping baths, comprising the steps of individually accommodating contact lenses in respective containers which are capable of enabling a flow of one or more treatment fluids into and out of the container, holding the containers in carriers, advancing the containers through the dipping baths, subjecting the carriers for the containers to a reciprocating lowering and raising motion along the transport through the dipping baths, wherein a portion of each container which accommodates a contact lens remains immersed in the treatment fluid contained in the dipping bath while the container held by the carrier is transported through the dipping baths from a starting end to a leaving end thereof, wherein the transport of the contact lenses through each dipping bath is accomplished stepwise.