Claims:

1. A liquid immersion exposure apparatus arranged to expose substrate with an exposure beam, the apparatus comprising:

an optical member through which the exposure beam transmitted such that the exposure beam is irradiated onto the substrate;

a table arranged to hold the substrate; and

a pad member arranged to be movable relative to the table,

wherein the table is arranged to be movable relative to the optical member such that, when the table is arranged opposite to the optical member, immersion liquid is in contact with the optical member and is maintained between the optical member and the table,

wherein the pad member is arranged to be movable relative to the optical member such that, when the pad member is arranged opposite to the optical member, the immersion liquid is in contact with the optical member and is maintained between the optical member and the pad member,

wherein the table and the pad member are arranged such that one of the table and the pad member, which is arranged away from under the optical member, is moved relative to the other one of the table and the pad member, which is arranged opposite to the optical member, so that the table and the pad member are adjacent to each other and so that an upper surface of the table and a surface of the pad member are juxtaposed and are substantially coplanar,

wherein the table and the pad member are arranged such that the table and the pad member arranged adjacent to each other are moved relative to the optical member so that the one of the table and the pad member is arranged opposite to the optical member in place of the other one of the table and the pad member while the immersion liquid is maintained under the optical member, and

wherein the other one of the table and the pad member is moved at an area away from under the optical member while the one of the table and the pad member is arranged opposite to the optical member to maintain the liquid immersion under the optical member.

2. The liquid immersion exposure apparatus according to claim 1,

wherein the table and the pad member arranged adjacent to each other are moved relative to the optical member while the table and the pad member are in a close state.

3. The liquid immersion exposure apparatus according to claim 1 or 2,

wherein the table and the pad member arranged adjacent to each other are moved relative to the optical member so that a

boundary or a gap between the upper surface and the surface passes through a position under the immersion liquid.

4. The liquid immersion exposure apparatus according to any one of claims 1 to 3,
wherein the table and the pad member arranged adjacent to each other are moved, while the upper surface and the surface are juxtaposed, relative to the optical member until one of the table and the pad member is arranged opposite to the optical member.

5. The liquid immersion exposure apparatus according to any one of claims 1 to 4,
wherein one of the table and the pad member is moved relative to the other one of the table and the pad member so that the upper surface and the surface are arranged adjacent to each other and to be substantially coplanar.

6. The liquid immersion exposure apparatus according to any one of claims 1 to 5,
wherein the table and the pad member arranged adjacent to each other are moved substantially together.

7. The liquid immersion exposure apparatus according to any one of claims 1 to 6,
wherein, while the liquid immersion is maintained under the optical member by use of the pad member, a different process from the exposure process for the substrate is performed at the table, which is at an area away from under the optical member.

8. The liquid immersion exposure apparatus according to claim 7,
wherein the different process comprises a loading process and/or an uploading process for the substrate.

9. The liquid immersion exposure apparatus according to claim 7,
further comprising an alignment system that is arranged to perform an alignment for the substrate,
wherein the different process comprises an alignment process for the substrate.

10. The liquid immersion exposure apparatus according to claim 9,
further comprising a replacement system that is arranged to replace substrate held by the table,
wherein the different process comprises a replacement process for the substrate.

11. The liquid immersion exposure apparatus according to any one of claims 1 to 10,

wherein, while the pad member is away from under the optical member, the liquid immersion is maintained under the optical member by use of the table and the exposure process for the substrate it performed.

12. The liquid immersion exposure apparatus according to any one of claims 1 to 11,

wherein the exposure process for the substrate is performed while the table is arranged opposite to the optical member, and

wherein at least one of an alignment for the substrate and a replacement for the substrate is performed while the table is away from under the optical member.

13. The liquid immersion exposure apparatus according to any one of claims 1 to 12,

wherein the pad member comprises a second stage that is different from a first stage having the table.

14. The liquid immersion exposure apparatus according to claim 13,

wherein the second stage comprises a pad stage that is arranged to support a pad for maintaining the liquid immersion.

15. A device fabricating method comprising:

exposing a workpiece by use of the liquid immersion exposure apparatus of any one of claims 1 to 14; and

developing the exposed workpiece.

16. A liquid immersion exposure method of exposing substrate with an exposure beam via an optical member, he method comprising:

moving one of a table and a pad member, which is arranged away from under an optical member, relative to the other one of the table and the pad member, which is arranged opposite to the optical member, so that the table and the pad member are adjacent to each other and so that an upper surface of the table and a surface of the pad member are juxtaposed and are substantially coplanar, the table being arranged to hold the substrate, the pad member being arranged to be movable relative to the table; and

moving the table and the pad member, which are arranged adjacent to each other, relative to the optical member so that the one of the table and the pad member is arranged opposite to the optical member in place of the other one of the table and the pad member while immersion liquid is maintained under the optical member,

wherein the other one of the table and the pad member is moved at an area away from under the optical member while the one of the table and the pad member is arranged opposite to the optical member to maintain the liquid immersion under the optical member.

17. The liquid immersion exposure method according to claim 16,
wherein the table and the pad member arranged adjacent to each other are moved relative to the optical member while the table and the pad member are in a close state.

18. The liquid immersion exposure method according to claim 16 or 17,
wherein the table and the pad member arranged adjacent to each other are moved relative to the optical member so that a boundary or a gap between the upper surface and the surface passes through a position under the immersion liquid.

19. The liquid immersion exposure method according to any one of claims 16 to 18,
wherein the table and the pad member arranged adjacent to each other are moved, while the upper surface and the surface are juxtaposed, relative to the optical member until one of the table and the pad member is arranged opposite to the optical member.

20. The liquid immersion exposure method according to any one of claims 16 to 19,
wherein one of the table and the pad member is moved relative to the other one of the table and the pad member so that the upper surface and the surface are arranged adjacent to each other and to be substantially coplanar.

21. The liquid immersion exposure method according to any one of claims 16 to 20,
wherein the table and the pad member arranged adjacent to each other are moved substantially together.

22. The liquid immersion exposure method according to any one of claims 16 to 21,
wherein, while the liquid immersion is maintained under the optical member by use of the pad member, a different process from the exposure process for the substrate is performed at the table, which is away from under the optical member.

23. The liquid immersion exposure method according to claim 22,
wherein the different process comprises a loading process and/or an uploading process for the substrate.

24. The liquid immersion exposure method according to claim 22,

wherein an alignment for the substrate is performed by use of an alignment system that is arranged away from the optical member, and

wherein the different process comprises an alignment process for the substrate.

25. The liquid immersion exposure method according to claim 24,

wherein an replacement of substrate held on the table is performed at a position away from the optical member, and

wherein the different process comprises a replacement process for the substrate.

26. The liquid immersion exposure method according to any one of claims 16 to 25,

wherein, while the pad member is away from under the optical member, the liquid immersion is maintained under the optical member by use of the table and the exposure process for the substrate it performed.

27. The liquid immersion exposure method according to any one of claims 16 to 26,

wherein the exposure process for the substrate is performed while the table is arranged opposite to the optical member, and

wherein at least one of an alignment for the substrate and a replacement for the substrate is performed while the table is away from under the optical member.

28. The liquid immersion exposure method according to any one of claims 16 to 27,

wherein the pad member comprises a second stage that is different from a first stage having the table.

29. The liquid immersion exposure method according to claim 28,

wherein the second stage comprises a pad stage that is arranged to support a pad for maintaining the liquid immersion.

30. A device fabricating method comprising:

exposing a workpiece by use of the liquid immersion exposure method of any one of claims 16 to 29; and

developing the exposed workpiece.

Claims

1. A liquid immersion exposure apparatus that exposes a substrate with an exposure beam via an optical member and an immersion liquid, the exposure apparatus comprising:

a table arranged below the optical member and configured to hold the substrate; and

a pad member that is movable relative to the table and having a surface that is arranged to be contactable with the immersion liquid, wherein

the table is movable relative to the optical member such that, when the table is arranged opposite to the optical member, the immersion liquid is in contact with the optical member and is maintained between the optical member and the table,

the pad member is movable relative to the optical member such that, when the pad member is arranged opposite to the optical member, the immersion liquid is in contact with the optical member and is maintained between the optical member and the pad member,

one of the table and the pad member, which is arranged away from being opposite the optical member, is movable relative to the other one of the table and the pad member, which is arranged opposite to the optical member, so that the table and the pad member are adjacent to each other and so that an upper surface of the table and the surface of the pad member are juxtaposed and are substantially coplanar,

the table and the pad member arranged adjacent to each other are movable relative to the optical member so that the one of the table and the pad member is arranged opposite to the optical member in place of the other one of the table and the pad member while the immersion liquid is substantially maintained under the optical member, and

the other one of the table and the pad member is movable at an area away from being opposite the optical member while the one of the table and the pad member is arranged opposite to the optical member to maintain the immersion liquid under the optical member.

2. The liquid immersion exposure apparatus according to claim 1,

wherein the table and the pad member arranged adjacent to each other are movable relative to the optical member while the table and the pad member are in a close state.

3. The liquid immersion exposure apparatus according to claim 2,

wherein the table and the pad member arranged adjacent to each other are movable relative to the optical member so that a boundary or a gap between the upper surface and the surface passes through a position under the immersion liquid.

4. The liquid immersion exposure apparatus according to claim 3,

wherein the table and the pad member arranged adjacent to each other are movable, while the upper surface and the surface are juxtaposed, relative to the optical member until the one of the table and the pad member is arranged opposite to the optical member.

5. The liquid immersion exposure apparatus according to claim 4,

wherein the one of the table and the pad member is movable relative to the other one of the table and the pad member so that the upper surface and the surface are arranged adjacent to each other and to be substantially coplanar.

6. The liquid immersion exposure apparatus according to claim 5,

wherein the table and the pad member arranged adjacent to each other are movable substantially together.

7. The liquid immersion exposure apparatus according to claim 2,

wherein, while the immersion liquid is maintained under the optical member by use of the pad member, a different process from an exposure process for the substrate is performed at the table, which is at the area away from being opposite the optical member.

8. The liquid immersion exposure apparatus according to claim 7,

wherein the different process comprises a loading process, an unloading process, or a loading and unloading process for the substrate.

9. The liquid immersion exposure apparatus according to claim 7, further comprising an alignment system that performs an alignment process for the substrate,

wherein the different process comprises the alignment process for the substrate.

10. The liquid immersion exposure apparatus according to claim 9, further comprising a replacement system that replaces the substrate held by the table,

wherein the different process comprises a replacement process for the substrate.

11. The liquid immersion exposure apparatus according to claim 7, wherein, while the pad member is away from being opposite the optical member, the immersion liquid is maintained under the optical member by use of the table, and the exposure process for the substrate is performed.

12. The liquid immersion exposure apparatus according to claim 2, wherein an exposure process for the substrate is performed while the table is arranged opposite to the optical member, and

at least one of an alignment for the substrate and a replacement for the substrate is performed while the table is away from being opposite the optical member.

13. The liquid immersion exposure apparatus according to claim 2, wherein the pad member comprises a second stage that is different from a first stage having the table.

14. The liquid immersion exposure apparatus according to claim 13, wherein the second stage comprises a pad stage that is configured to support a pad for maintaining the immersion liquid.

15. A device fabricating method comprising:

exposing a workpiece by use of the liquid immersion exposure apparatus of claim 1; and

developing the exposed workpiece.

16. A liquid immersion exposure method of exposing a substrate with an exposure beam via an optical member and an immersion liquid, the method comprising:

moving one of a table and a pad member, which is arranged away from being opposite an optical member, relative to the other one of the table and the pad member, which is arranged opposite to the optical member, so that the table and the pad member are adjacent to each other and so that an upper surface of the table and a surface of the pad member are juxtaposed and are substantially coplanar, the table being configured to hold the substrate, the pad member being movable relative to the table; and

moving the table and the pad member, which are arranged adjacent to each other, relative to the optical member so that the one of the table and the pad member is arranged opposite to the optical member in place of the other one of the table and the pad member while the immersion liquid is maintained under the optical member, wherein

the other one of the table and the pad member is moved at an area away from being opposite the optical member while the one of the table and the pad member is arranged opposite to the optical member to maintain the immersion liquid under the optical member.

17. The liquid immersion exposure method according to claim 16,

wherein the table and the pad member arranged adjacent to each other are moved relative to the optical member while the table and the pad member are in a close state.

18. The liquid immersion exposure method according to claim 17,

wherein the table and the pad member arranged adjacent to each other are moved relative to the optical member so that a boundary or a gap between the upper surface and the surface passes through a position under the immersion liquid.

19. The liquid immersion exposure method according to claim 18,

wherein the table and the pad member arranged adjacent to each other are moved, while the upper surface and the surface are juxtaposed, relative to the optical member until the one of the table and the pad member is arranged opposite to the optical member.

20. The liquid immersion exposure method according to claim 19,

wherein the one of the table and the pad member is moved relative to the other one of the table and the pad member so that the upper surface and the surface are arranged adjacent to each other and to be substantially coplanar.

21. The liquid immersion exposure method according to claim 20,

wherein the table and the pad member arranged adjacent to each other are moved substantially together.

22. The liquid immersion exposure method according to claim 17,

wherein, while the immersion liquid is maintained under the optical member by use of the pad member, a different process from an exposure process for the substrate is performed at the table, which is away from being opposite the optical member.

23. The liquid immersion exposure method according to claim 22,

wherein the different process comprises a loading process, an unloading process, or a loading and unloading process for the substrate.

24. The liquid immersion exposure method according to claim 22, wherein

an alignment process for the substrate is performed by use of an alignment system that is arranged away from the optical member, and

the different process comprises the alignment process for the substrate.

25. The liquid immersion exposure method according to claim 24, wherein

a replacement of the substrate held on the table is performed at a position away from the optical member, and

the different process comprises a replacement process for the substrate.

26. The liquid immersion exposure method according to claim 22,

wherein, while the pad member is away from being opposite the optical member, the immersion liquid is maintained under the optical member by use of the table, and the exposure process for the substrate is performed.

27. The liquid immersion exposure method according to claim 17, wherein

an exposure process for the substrate is performed while the table is arranged opposite to the optical member, and

at least one of an alignment for the substrate and a replacement for the substrate is performed while the table is away from being opposite the optical member.

28. The liquid immersion exposure method according to claim 17,

wherein the pad member comprises a second stage that is different from a first stage having the table.

29. The liquid immersion exposure method according to claim 28,

wherein the second stage comprises a pad stage that is configured to support a pad for maintaining the immersion liquid.

30. A device fabricating method comprising:

exposing a workpiece by use of the liquid immersion exposure method of claim 16; and

developing the exposed workpiece.