embodiment, which will not be described below, are identical to those of the previously-described embodiment shown in FIG. **18**, and will not be described repetitively.

[0276] As shown in FIG. **34**, sponges **687**, each serving as a liquid-retaining member, are provided in through-holes **101***a* of polishing pad **101**. These sponges **687** have lower ends contacting base **654***b* of support member **654**, and have upper ends positioned above polishing surface of the polishing pad **101**. The sponges **687** are made from a deformable material, so that polishing head **1**, holding the substrate W, can compress the sponges **687** via the substrate W to allow the substrate W to contact the polishing surface during polishing. With this structure, the electrolytic solution is retained by the sponges **687** during polishing. Hence, an amount of the electrolytic solution scattering off the polishing surface due to a centrifugal force can be reduced.

[0277] On the other hand, when dressing the polishing surface, the above-described clamp is removed, and as shown in FIG. **35**, lid **654***a* is elevated so that the upper ends of the sponges **687** are positioned below the polishing surface. In this state, the lid **654***a* and the base **654***b* are fixed in position. Then, while a pure-water supply nozzle **688** supplies pure water onto the polishing surface, the dresser **218** dresses the polishing surface. Because the dresser **218** does not contact the sponges **687** during dressing, the sponges **687** are not damaged by the dresser **218**.

[0278] Other than the sponge, a fibrous member or an open-cell foam may be used for the liquid-retaining member. An example of a method of forming the open-cell foam includes the steps of mixing fine particles of calcium carbonate with a base material, injection-molding the base material mixed with the calcium carbonate particles to form an injection-molded product, and immersing the injection-molded product into hydrochloric acid water to decompose and dissolve the calcium carbonate particles. In this case, an amount of the calcium carbonate particles, filling the base material, is required to be large enough to allow the calcium carbonate particles to be in contact with each other. As the base material, polyurethane, polyolefin, or rubber can be used.

[0279] FIG. **36** is a schematic cross-sectional view showing another example of this embodiment. As shown in FIG. **36**, in this example, the electrolytic-solution path for directing the electrolytic solution to the through-holes **101***a* from below the polishing pad **101** is not provided. Instead, the electrolytic solution is supplied directly onto the polishing surface from the electrolytic-solution supply nozzle **102**. Sponges **687**, each serving as the liquid-retaining member, are provided in the through-holes **101***a*, respectively, so that the electrolytic solution, supplied from the electrolytic-solution supply nozzle **102**, is retained by the sponges **687**.

[0280] In this example, it is preferable that the upper ends of the sponges **687** be positioned below the polishing surface so as not to interfere with dressing of the polishing surface. An arrangement of the liquid-retaining members is not limited to the above examples in which the liquid-retaining members are disposed in the through-holes **101***a* which are uniformly distributed over the polishing surface. For example, the polishing surface may have grooves on its upper surface (i.e., polishing surface), and the liquid-retaining members may be disposed in these grooves. In this case, the arrangements of the liquid-retaining members as viewed from above include a linear arrangement, a concentric circular arrangement, and a fan-shaped arrangement.

[0281] FIG. **37** and FIG. **38** are cross-sectional views each schematically showing an example of a polishing pad **101** used in an electrochemical mechanical polishing apparatus **250** according to still another embodiment of the present invention. Components and operations of this embodiment, which will not be described below, are identical to those of the previously-described embodiment shown in FIG. **18**, and will not be described repetitively.

[0282] In this embodiment, each of through-holes **101***a* has an upper opening with a smaller diameter than a diameter of a lower opening thereof More specifically, in the example shown in FIG. **37**, the diameter of each of the through-holes **101***a* is gradually decreased from the lower opening to the upper opening. In the example shown in FIG. **38**, each of the through-holes **101***a* has two holes arranged vertically in series with different diameters. Because the upper opening is smaller than the lower opening, the electrolytic solution retained in the through-holes **101***a* is prevented from scattering due to a centrifugal force. In this embodiment, the electrolytic-solution path for directing the electrolytic solution to the through-holes **101***a* from below polishing pad **101** may not be provided. Instead, the electrolytic solution may be supplied directly onto the polishing surface from electrolytic-solution supply nozzle **102** so that the through-holes **101***a* retain the electrolytic solution therein.

[0283] FIG. **39** is a schematic cross-sectional view showing an electrochemical mechanical polishing apparatus **250** according to still another embodiment of the present invention. Components and operations of this embodiment, which will not be described below, are identical to those of the previously-described embodiment shown in FIG. **18**, and will not be described repetitively.

[0284] As shown in FIG. **39**, an annular gas passage **690** is provided so as to surround polishing pad **101**. This gas passage **690** has a slit (i.e., gas ejection opening) **691** in an inner circumferential surface thereof, so that a gas, flowing through the gas passage **690**, is ejected through the slit **691** toward a center of polishing surface of the polishing pad **101**. With this gas passage **690**, the gas can push back the electrolytic solution that is about to flow out from the polishing surface by a centrifugal force. The gas ejection opening is not limited to the slit. Plural holes (each having a diameter of not more than 1 mm, for example) may be provided as the gas ejection opening. In this embodiment, the electrolytic-solution path for directing the electrolytic solution to the through-holes **101***a* from below the polishing pad **101** may not be provided. Instead, the electrolytic solution may be supplied directly onto the polishing surface from electrolytic-solution supply nozzle **102**. Further, a conductive pad may be used for the polishing pad **101**, and the second electrode (electric supply electrode) may be in contact with the conductive pad so as to supply an electric current to the conductive film on the substrate via the conductive pad.

[0285] FIG. **40** is a schematic side view showing an electrochemical mechanical polishing apparatus **250** according to still another embodiment of the present invention. Components and operations of this embodiment, which will not be described below, are identical to those of the previously-described embodiment shown in FIG. **18**, and will not be described repetitively.

[0286] As shown in FIG. **40**, two cylindrical rollers **693** and **694**, each rotatable about its own axis, are provided laterally to polishing pad **101**. These rollers **693** and **694** are operable to sandwich the overhanging polishing head **1** during polish-