polishing agent having a relatively high alkaline etching rate and containing numerous abrasive grains is preferably used. As such a polishing agent, a first alkaline aqueous solution containing abrasive grains with a density of $1 \times 10^{14}/cm^3$ or more is used in this embodiment. The polishing rate of silicon using the first alkaline aqueous solution is preferably 100 nm/min to 300 nm/min. A polishing rate of 100 nm/min or more would not deteriorate the productivity, and a polishing rate of 300 nm/min or less would not make the wafer surface rough, thus the wafer surface can be uniformly polished. With a view to achieving such a polishing rate, the first alkaline aqueous solution does not contain water-soluble polymers and preferably contains one or more alkalis selected from potassium hydroxide (KOH), sodium hydroxide (NaOH), tetramethylammonium hydroxide (TMAH), and tetraethylammonium hydroxide (TEAH). The density of the abrasive grains is not particularly limited as long as it is $1 \times 10^{14}/cm^3$ or more; however, the density is preferably $1 \times 10^{15}/cm^3$ or less in terms of preventing the aggregation of the abrasive grains. Here, in this embodiment, after the polishing while supplying the above first alkaline aqueous solution, the solution to be supplied is switched to a second alkaline aqueous solution with specifications equivalent to those of a third alkaline aqueous solution as described below.

[0027] The wafer immediately after the upstream polishing step is detached from the first polishing head and transferred to the finish polishing unit while supplying water to the wafer surface to prevent the surface from drying. This transfer may also be simply referred to as "underwater transfer". Specifically, the wafer is accommodated in a transfer container and is transferred to the finish polishing unit with water being supplied to the wafer surface. Alternatively, the passage for the wafer transfer may be filled with water, and the wafer may be transferred through the passage. Further, the wafer may be accommodated in a transfer container filled with water, and the container may be transferred.

[0028] In the finish polishing step S5, using the finish polishing unit including a second plate provided with a second polishing pad on its surface and a second polishing head, the surface of the silicon wafer is further polished by rotating the second plate and the silicon wafer held by the second polishing head while making the silicon wafer in contact with the second