

ABSTRACT

The apparatus comprises: a driving signal generating circuit (49) for generating a first voltage waveform for expanding piezoelectric vibrators at a rate suitable to form ink drops of ink, a second voltage for holding an expansion state or a contraction state, and a third voltage waveform for contracting the piezoelectric vibrators at a rate suitable to suck ink into pressure generating chambers; a discharge end detecting circuit (52) for detecting the time when the process of forming ink drops by the first voltage waveform is ended; a delay circuit (53) for delaying a signal from the circuit (52) by a time ΔT till the vibration of menisci caused by the process of forming ink drops is switched to the motion toward nozzle openings; a charge signal generating circuit (48) for generating the third voltage waveform on the basis of a signal from the delay circuit (53); and a discharge signal generating circuit (51) for generating the first voltage waveform on the basis of a print timing signal. The third voltage waveform is generated when the menisci produced after forming ink drops have started moving toward the nozzle openings, so that ink required for the next formation of ink drops is sucked into the pressure generating chambers. Therefore, the force to retreat the menisci due to the expansion of the pressure generating chambers is canceled by motion of the menisci per se, and the retreat of the menisci caused by the suction of ink can be limited to the minimum. It is therefore possible to stabilize the positions of the menisci independently of the frequency.

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