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Kadowaki et al.

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(54) **IMAGE FORMING APPARATUS SWITCHING BETWEEN FIRST AND SECOND AIR FEEDING OPERATIONS WITH DIFFERENT OPENING AMOUNTS OF AN OPENING THROUGH WHICH AIR FED FROM A FAN PASSES ACCORDING TO THE DETECTED TEMPERATURE**

USPC 399/69, 92
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

7,251,447 B2	7/2007	Kanamori et al.
7,536,145 B2	5/2009	Tomine et al.
8,554,098 B2	10/2013	Nishiyama
8,755,706 B2	6/2014	Minagawa et al.
8,855,516 B2	10/2014	Koyama et al.
8,909,088 B2	12/2014	Murooka
9,116,480 B2*	8/2015	Kadowaki et al. . G03G 15/2017

FOREIGN PATENT DOCUMENTS

JP	60-136779 A	7/1985
JP	2001-183929 A	7/2001
JP	2004-198895 A	7/2004
JP	2007-187816 A	7/2007

* cited by examiner

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(57) **ABSTRACT**

An image forming apparatus includes a fixing portion, including: a heating member and a back-up member forming a nip; and an air feeding portion for feeding air to a non-sheet-passing area of at least one of the heating member and the back-up member, the air feeding portion including a fan for feeding the air, a duct, including an opening, for guiding the air fed from the fan through the opening to the non-sheet-passing area, and an adjusting member for adjusting an opening amount of the opening. The apparatus executes a first air feeding operation with a first opening amount and a first rotational frequency of the fan and a second air feeding operation with a second opening amount and a second rotational frequency, when the fixing portion fixes the images on sheets having the same widths.

15 Claims, 12 Drawing Sheets

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CPC **G03G 15/2017** (2013.01); **G03G 15/2042** (2013.01); **G03G 2215/2035** (2013.01)

(58) **Field of Classification Search**
CPC G03G 15/2017; G03G 15/2021; G03G 15/2039; G03G 15/2046; G03G 15/2053; G03G 15/2014; G03G 2215/2035

