

## United States Patent [19]

### Ikesue et al.

### [54] CARTRIDGE FOR REPLENISHING TWO-INGREDIENT DEVELOPER TO AN IMAGE FORMING APPARATUS AND A REPLENISHING DEVICE USING THE SAME

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- [73] Assignee: Ricoh Company, Ltd., Tokyo, Japan
- [21] Appl. No.: 521,324
- [22] Filed: Aug. 30, 1995

### [30] Foreign Application Priority Data

Aug. 31, 1994	[JP]	Japan	
Oct. 20, 1994	[JP]	Japan	
Nov. 4, 1994	[JP]	Japan	
Nov. 4, 1994	[JP]	Japan	
Jul. 6, 1995	[JP]	Japan	

- - 399/358

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US005398234A

# [11] Patent Number: 5,598,254

### [45] Date of Patent: Jan. 28, 1997

### FOREIGN PATENT DOCUMENTS

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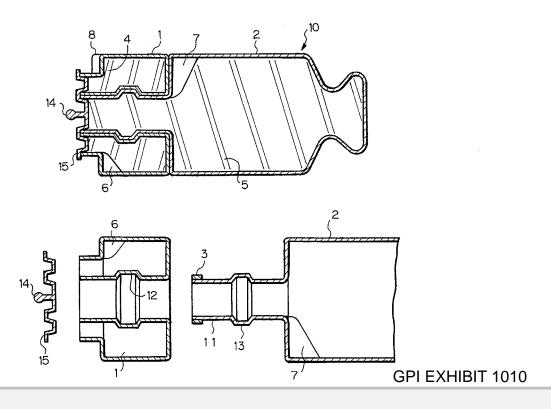
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Attorney, Agent, or Firm-Oblon, Spivak, McClelland, Maier & Neustadt, P.C.

#### [57] ABSTRACT

A cartridge for replenishing a two-ingredient developer to an image forming apparatus, and a developer replenishing device using it are disclosed. The cartridge is made up of two containers each storing a content of particular kind. One of the containers has an annular portion and a bore formed at the center by the annular portion. The other container has a cylindrical configuration and coaxially mates with the above container to form a single unit. Coaxial openings are respectively formed in the containers. Spiral grooves inclined in opposite directions to each other are respectively formed on the inner peripheries of the containers.

### 8 Claims, 18 Drawing Sheets



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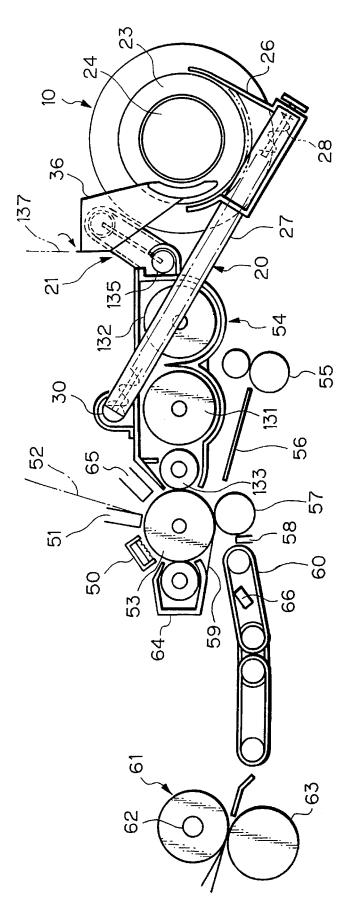


Fig. 1

Α

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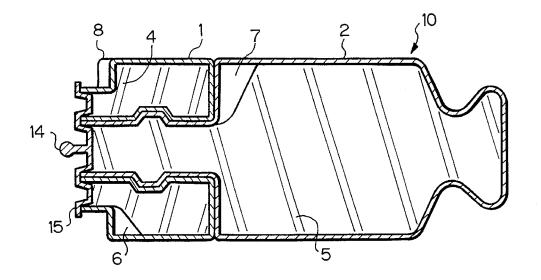


Fig. 2B

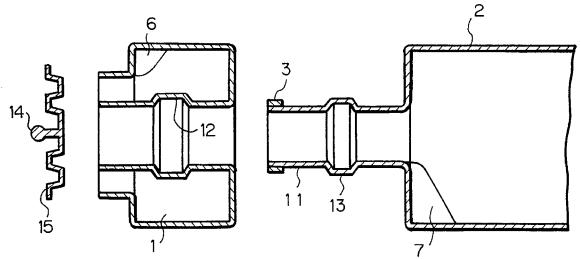


Fig. 2C

4(5)

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Α

D

Δ

Fig. 3A

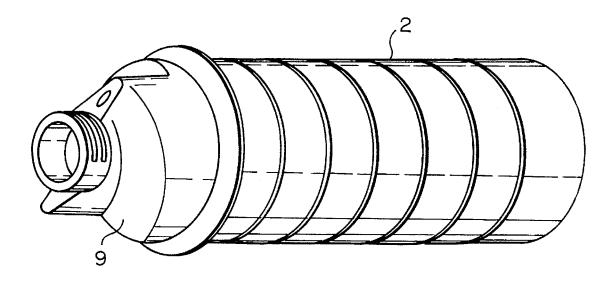
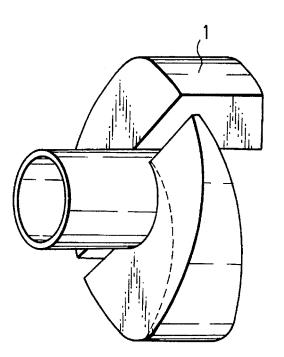


Fig. 3B



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# Fig. 4A

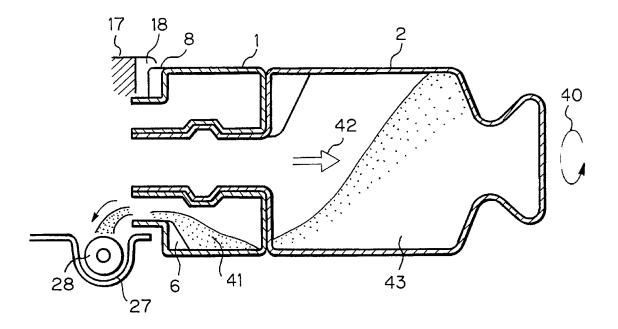
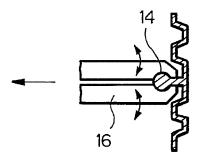


Fig. 4B



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Α

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