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Kaufman et al.

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[54] **AIRCRAFT-BASED FIRE-FIGHTING BUCKET**

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[52] **U.S. Cl.** **169/53**; 239/171; 244/136; 222/548

[58] **Field of Search** 169/53, 46, 56, 169/60, 61; 244/136, 137.4, 142; 239/171, 562, 581.1; 222/548, 485, 448

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[57] **ABSTRACT**

A fire fighting system uses a bucket suspended from a helicopter to deposit fire retardant onto a fire from an opening in the bottom of the bucket. The bucket has a predetermined configuration and a valve for controlling the area of an opening through which the retardant is deposited when the bucket is suspended from the helicopter. A suitable mechanism, such as an electrically driven valve actuator, varies the area of the opening to deposit the retardant at a volume flow rate as a desired function of time while the helicopter flies along a drop line. The mechanism varies the area of the opening in accordance with a schedule determined before discharge is begun according to the configuration of the bucket, the flow characteristics of the opening as the valve changes the area thereof, and the initial amount of the retardant material in the bucket. As a result, the desired volume flow rate profile can be achieved without the use of expensive and fragile electronic circuitry and sensors that monitor the height of the retardant in the bucket during the deposition.

33 Claims, 6 Drawing Sheets