



US007571062B2

(12) **United States Patent**
Henry et al.

(10) **Patent No.:** **US 7,571,062 B2**
(45) **Date of Patent:** ***Aug. 4, 2009**

(54) **DIGITAL FLOWMETER**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **11/555,033**

(22) Filed: **Oct. 31, 2006**

(65) **Prior Publication Data**

US 2007/0124090 A1 May 31, 2007

Related U.S. Application Data

(63) Continuation of application No. 11/130,233, filed on May 17, 2005, now Pat. No. 7,136,761, which is a continuation of application No. 10/637,620, filed on Aug. 11, 2003, now Pat. No. 6,917,887, which is a continuation of application No. 09/931,057, filed on Aug. 17, 2001, now Pat. No. 6,754,594, which is a continuation of application No. 09/111,739, filed on Jul. 8, 1998, now Pat. No. 6,311,136.

(60) Provisional application No. 60/066,554, filed on Nov. 26, 1997.

(51) **Int. Cl.**
G06F 15/00 (2006.01)

(52) **U.S. Cl.** **702/45**; 73/861.355; 73/861.356

(58) **Field of Classification Search** None
See application file for complete search history.

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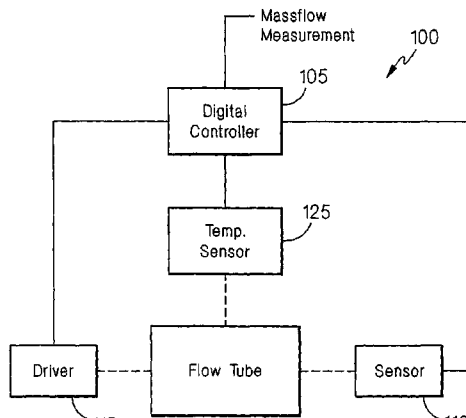
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(57) **ABSTRACT**

A controller for a flowmeter includes an input module operable to receive a sensor signal from a sensor connected to a vibratable flowtube. The sensor signal is related to a fluid flow through the flowtube. The controller also includes a signal processing system operable to receive the sensor signal, determine sensor signal characteristics, and output drive signal characteristics for a drive signal applied to the flowtube. An output module is operable to output the drive signal to the flowtube and a control system is operable to modify the drive signal and thereby maintain oscillation of the flowtube during a transition of the flowtube from a substantially empty state to a substantially full state.

48 Claims, 71 Drawing Sheets



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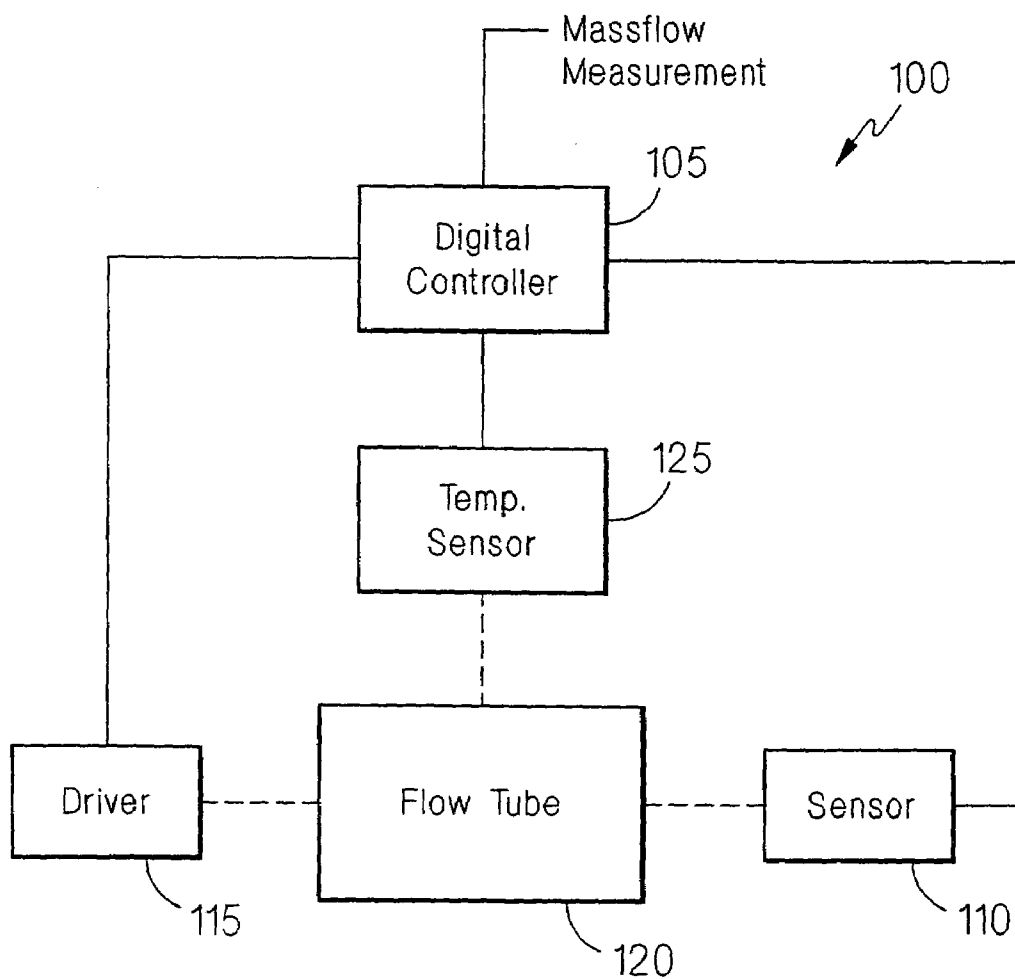


FIG. 1

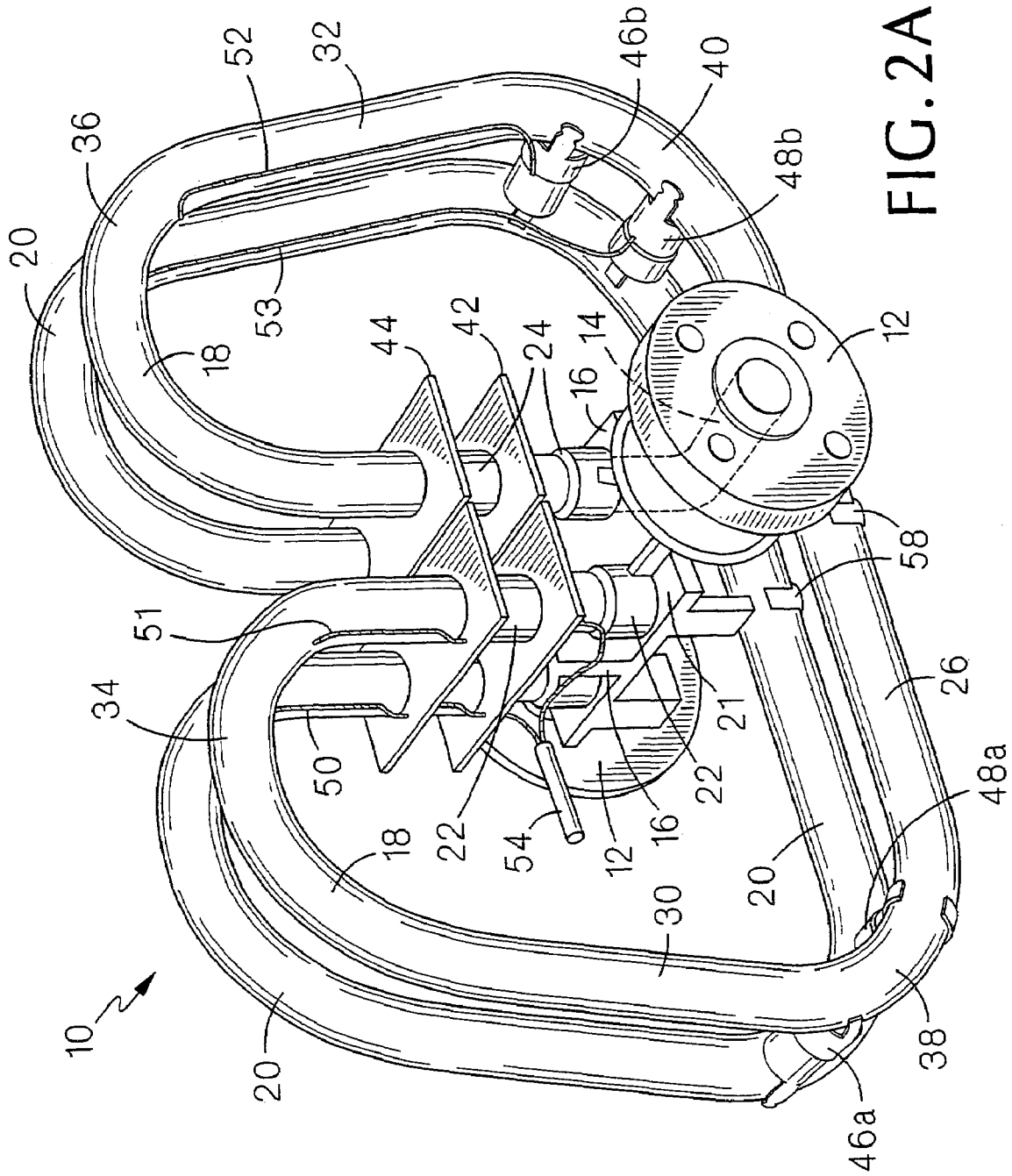
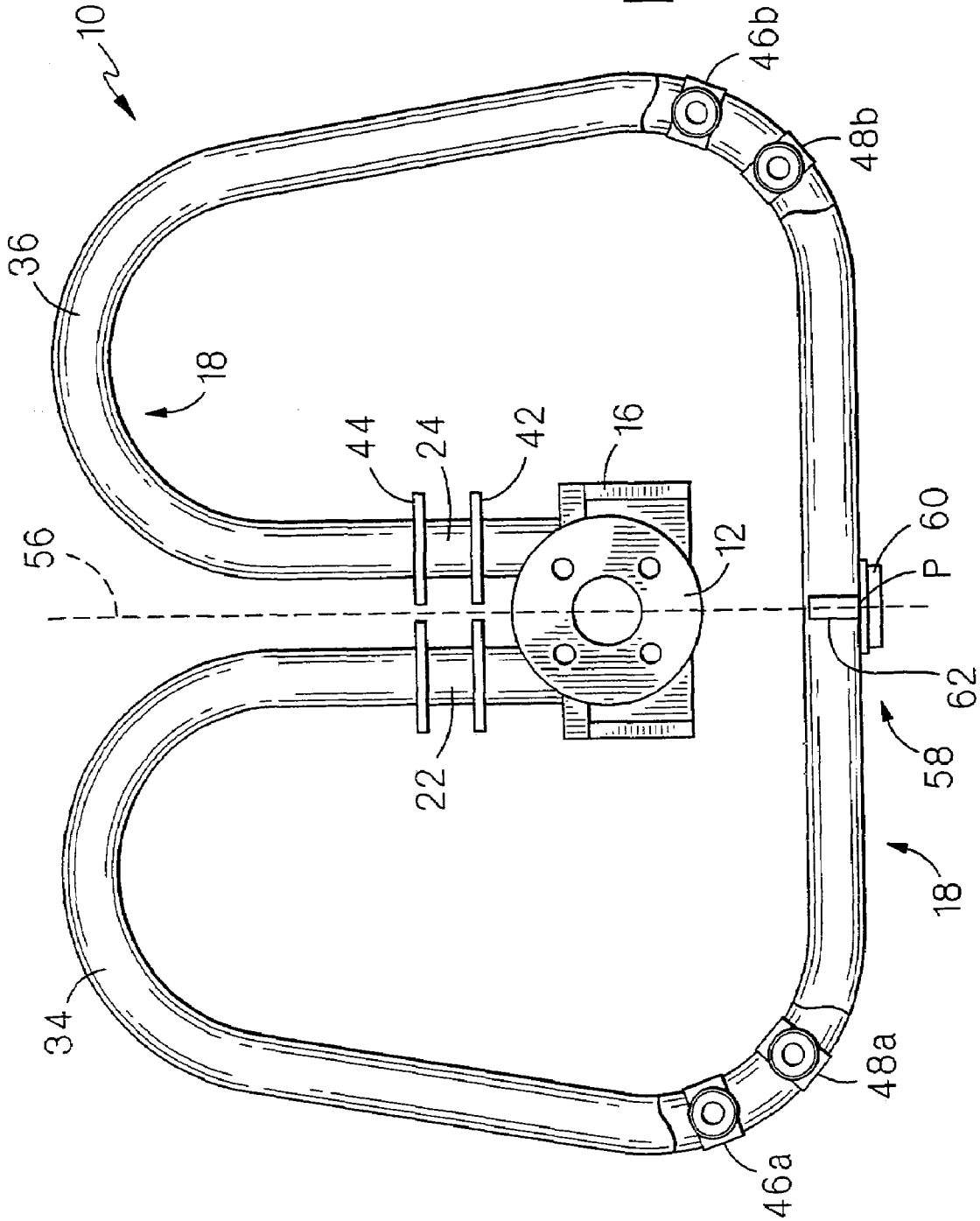


FIG. 2A

FIG. 2B



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