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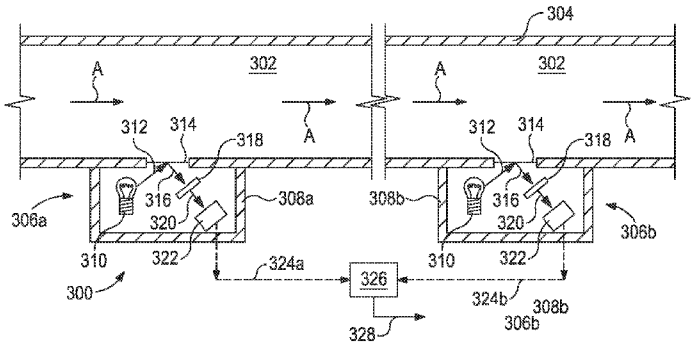


FIG. 3

(57) Abstract: Disclosed are systems and methods for analyzing a flow of a fluid at two or more discrete locations to determine the concentration of a substance therein. One method of determining a characteristic of a fluid may include containing a fluid within a flow path that provides at least a first monitoring location and a second monitoring location, generating a first output signal corresponding to the characteristic of the fluid at the first monitoring location with a first optical computing device, generating a second output signal corresponding to the characteristic of the fluid at the second monitoring location with a second optical computing device, receiving first and second output signals from the first and second optical computing devices, respectively, with a signal processor, and determining a difference between the first and second output signals with the signal processor.

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