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(54) **Title:** SYSTEMS AND METHODS FOR INSPECTING AND MONITORING A PIPELINE

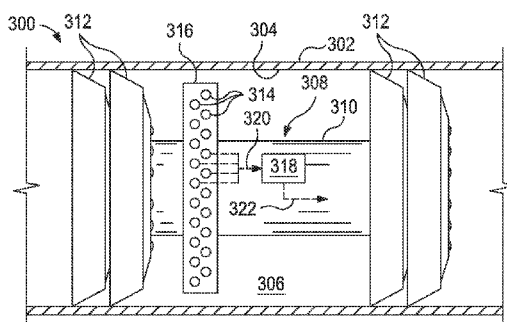


FIG. 3A

(57) **Abstract:** Systems and methods for inspecting and monitoring an inner surface of a pipeline. One system includes a pig arranged within the pipeline, one or more optical computing devices arranged on the pig adjacent the inner surface of the pipeline for monitoring at least one substance present on the inner surface. The optical computing devices include at least one integrated computational element configured to optically interact with the at least one substance and thereby generate optically interacted light, and at least one detector arranged to receive the optically interacted light and generate an output signal corresponding to a characteristic of the at least one substance. A signal processor is communicably coupled to the at least one detector of each optical computing device for receiving the output signal of each optical computing device and determining the characteristic of the at least one substance.

