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(54) Title of the Invention: **Mobile microscopy system for air quality monitoring**
Abstract Title: **Mobile microscopy system for air quality monitoring**

(57) A lens-free microscope for monitoring air quality includes a housing that contains a vacuum pump configured to draw air into an impaction nozzle. The impaction nozzle has an output located adjacent to an optically transparent substrate for collecting particles. One or more illumination sources are disposed in the housing and are configured to illuminate the collected particles on the optically transparent substrate. An image sensor is located adjacent to the optically transparent substrate, wherein the image sensor collects particle diffraction patterns or holographic images cast upon the image sensor. At least one processor is disposed in the housing and controls the vacuum pump and the one or more illumination sources. Image files are transferred to a separate computing device for image processing using machine learning to identify particles and perform data analysis to output particle images, particle size, particle density, and/or particle type data.

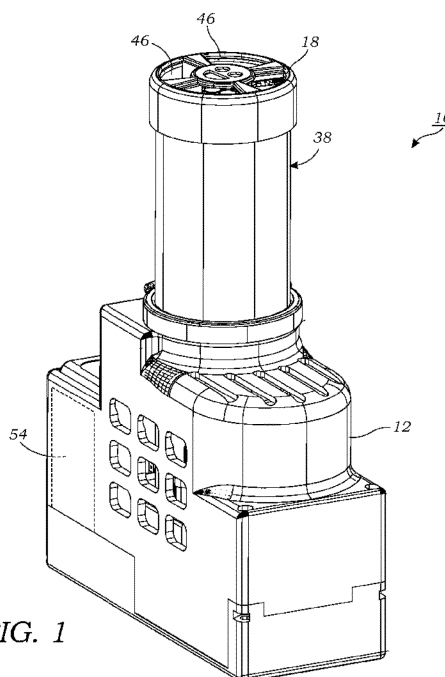


FIG. 1

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