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(54) **MOLECULAR DIAGNOSTICS
AMPLIFICATION SYSTEM AND METHODS**

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(57) **ABSTRACT**

The present invention relates to automated devices and methods for the amplification of segments of nucleic acid in a convenient and portable manner. A single-use nucleic acid amplification device for producing an amplicon includes a housing and an amplification chamber. The chamber includes an ingress with a first reversible seal, an egress with a second reversible seal, a sealable sample entry orifice, and a first wall forming a portion of the chamber. The first wall includes a thermally conductive material and includes an interior surface and an exterior surface. The exterior surface includes a heating circuit and a temperature sensor. The sample entry orifice permits a sample of nucleic acid to enter the amplification chamber. The ingress is connected to a first conduit along with a pneumatic pump and a fluid pouch. The egress is connected to a second conduit permitting egress of the amplicon from the amplification chamber.

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