ABSTRACT

VIBRATION SYSTEMS AND METHODS

In one or more embodiments, a vibration system comprises a vibratable plate, a support member surrounding the vibratable plate, and a vibration-inducing member surrounding the support member, wherein the vibration-inducing member is configured to radially expand and contract against the support member so as to produce axial vibration of the vibratable plate. In one embodiment, the vibratable plate has an outer circumference; a tubular member is concentrically disposed about the outer circumference of the plate, and an annular vibration-inducing member is concentrically disposed about the outer circumference of the tubular member. The vibration-inducing member is preferably a piezoelectric ring that is radially expandable and contractable against the wall of the tubular member to cause the plate to vibrate in the axial direction. In another embodiment, an aerosol generating system comprises an piezoelectric ring that is radially expandable and contractable upon actuation thereof; a tubular member disposed within the center hole of the piezoelectric ring, and a circular vibratable aperture plate disposed across the internal lumen of the tubular member. The piezoelectric ring is radially expandable and contractable against the tubular member to cause the aperture plate to vibrate in the axial direction, and a reservoir of liquid is coupled to the tubular member so as to supply the liquid to the vibratable aperture plate and produce an aerosol upon vibration thereof.

Fig. 1a