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**NOGUCHI**(10) **Pub. No.: US 2022/0416762 A1**(43) **Pub. Date: Dec. 29, 2022**(54) **SURFACE ACOUSTIC WAVE RESONATOR,  
ACOUSTIC WAVE FILTER, AND  
MULTIPLEXER**(52) **U.S. Cl.**CPC ..... *H03H 9/25* (2013.01); *H03H 9/6483*  
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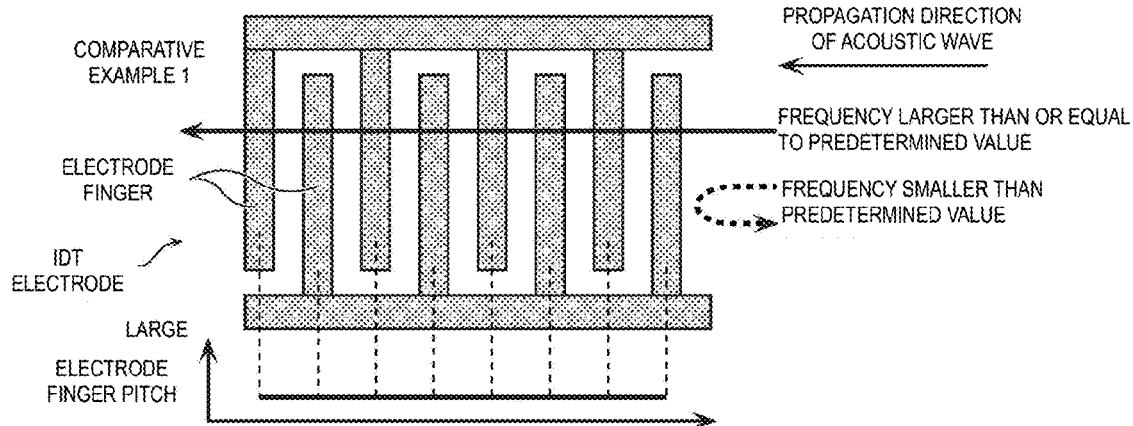
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**ABSTRACT**

A surface acoustic wave resonator includes one IDT electrode and reflectors. When a distance between an electrode finger  $Fe(k)$  and an electrode finger  $Fe(k+1)$  is defined as a  $k$ -th electrode finger pitch, in an electrode finger  $Fe(k-1)$ , the electrode finger  $Fe(k)$ , and the electrode finger  $Fe(k+1)$ , a value obtained by dividing a difference between the electrode finger pitch and a section average electrode finger pitch, which is an average of the electrode finger pitch and the electrode finger pitch, by an overall average electrode finger pitch is defined as a pitch deviation ratio, and a distribution obtained by calculating the pitch deviation ratio for all electrode fingers of the IDT electrode or the reflectors is defined as a histogram of the pitch deviation ratio, the IDT electrode or the reflectors have a standard deviation of the pitch deviation ratio in the histogram larger than or equal to about 0.2%.

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*H03H 9/02* (2006.01)**FIG. 2**