

**CPC****COOPERATIVE PATENT CLASSIFICATION****B06B****METHODS OR APPARATUS FOR GENERATING OR TRANSMITTING MECHANICAL VIBRATIONS OF INFRASONIC, SONIC, OR ULTRASONIC FREQUENCY, {e.g.} FOR PERFORMING MECHANICAL WORK IN GENERAL** (for particular

applications, see the relevant subclasses, e.g. [B07B 1/40](#), [B23Q 17/12](#), [B24B 31/06](#); measurement of mechanical vibrations [G01H](#); in direction finding, locating, distance or velocity measuring [G01S](#); {generating seismic energy [G01V 1/02](#)}; control of mechanical vibrations in general [G05D](#); sound-producing devices, e.g. bells, sirens, whistles [G10K](#), {e.g. methods or devices for transmitting, conducting, or directing sound in general [G10K 11/00](#)}; generation of electrical oscillations [H03B](#); electromechanical resonators in general [H03H](#); electromechanical transducers {for communication techniques, e.g. microphones, speakers} [H04R](#))

**B06B 1/00****Methods or apparatus for generating mechanical vibrations of infrasonic, sonic, or ultrasonic frequency**

- B06B 1/02 . making use of electrical energy ([B06B 1/18](#), [B06B 1/20](#) take precedence)
- B06B 1/0207 . . {Driving circuits (specially adapted for particular applications, see the relevant subclass, e.g. [G01](#); circuits for steering transducer arrays [G10K 11/34](#); basic circuits [H03](#))}
- B06B 1/0215 . . . {for generating pulses, e.g. bursts of oscillations, envelopes}
- B06B 1/0223 . . . {for generating signals continuous in time}
- B06B 1/023 . . . . {and stepped in amplitude, e.g. square wave, 2-level signal}
- B06B 1/0238 . . . . {of a single frequency, e.g. a sine-wave}
- B06B 1/0246 . . . . . {with a feedback signal}
- B06B 1/0253 . . . . . {taken directly from the generator circuit}
- B06B 1/0261 . . . . . {taken from a transducer or electrode connected to the driving transducer}
- B06B 1/0269 . . . . {for generating multiple frequencies}
- B06B 1/0276 . . . . . {with simultaneous generation, e.g. with modulation, harmonics}
- B06B 1/0284 . . . . . {with consecutive, i.e. sequential generation, e.g. with frequency sweep}
- B06B 1/0292 . . {Electrostatic transducers, e.g. electret-type}
- B06B 1/04 . . operating with electromagnetism (dynamo-electric motors with vibrating magnet, armature or coil system [H02K 33/00](#))
- B06B 1/045 . . . {using vibrating magnet, armature or coil system}
- B06B 1/06 . . operating with piezo-electric effect or with electrostriction (piezo-electric or electrostrictive devices per se [H01L 41/00](#))
- B06B 1/0603 . . . {using a piezo-electric bender, e.g. bimorph}
- B06B 1/0607 . . . {using multiple elements ([B06B 1/064](#) and [B06B 1/0688](#) take precedence)}
- B06B 1/0611 . . . . {in a pile}
- B06B 1/0614 . . . . . {for generating several frequencies}

B06B 1/0618	. . . . . {of piezo- and non-piezo-electric elements, e.g. 'Tonpilz'}
B06B 1/0622	. . . . . {on one surface}
B06B 1/0625	. . . . . {Annular array}
B06B 1/0629	. . . . . {Square array}
B06B 1/0633	. . . . . {Cylindrical array}
B06B 1/0637	. . . . . {Spherical array}
B06B 1/064	. . . . . {with multiple active layers}
B06B 1/0644	. . . . . {using a single piezo-electric element ( <a href="#">B06B 1/0688</a> takes precedence)}
B06B 1/0648	. . . . . {of rectangular shape}
B06B 1/0651	. . . . . {of circular shape}
B06B 1/0655	. . . . . {of cylindrical shape}
B06B 1/0659	. . . . . {of U-shape}
B06B 1/0662	. . . . . {with an electrode on the sensitive surface}
B06B 1/0666	. . . . . {used as a diaphragm}
B06B 1/067	. . . . . {which is used as, or combined with, an impedance matching layer}
B06B 1/0674	. . . . . {and a low impedance backing, e.g. air}
B06B 1/0677	. . . . . {and a high impedance backing}
B06B 1/0681	. . . . . {and a damping structure}
B06B 1/0685	. . . . . {on the back only of piezo-electric elements}
B06B 1/0688	. . . . . {with foil-type piezo-electric elements, e.g. PVDF}
B06B 1/0692	. . . . . {with a continuous electrode on one side and a plurality of electrodes on the other side}
B06B 1/0696	. . . . . {with a plurality of electrodes on both sides}
B06B 1/08	. . . . . operating with magnetostriction ( <a href="#">magnetostrictive devices per se H01L 41/00</a> )
B06B 1/085	. . . . . {using multiple elements, e.g. arrays}
B06B 1/10	. . . . . making use of mechanical energy ( <a href="#">B06B 1/18</a> , <a href="#">B06B 1/20</a> take precedence)
B06B 1/12	. . . . . operating with systems involving reciprocating masses
B06B 1/14	. . . . . the masses being elastically coupled
B06B 1/16	. . . . . operating with systems involving rotary unbalanced masses {( <a href="#">electrical motors using rotary unbalanced masses in general H02K 7/061</a> )}
B06B 1/161	. . . . . {Adjustable systems, i.e. where amplitude or direction of frequency of vibration can be varied}
B06B 1/162	. . . . . {Making use of masses with adjustable amount of eccentricity}
B06B 1/163	. . . . . {the amount of eccentricity being only adjustable when the system is stationary ( <a href="#">B06B 1/165</a> takes precedence)}
B06B 1/164	. . . . . {the amount of eccentricity being automatically variable as a function of the running condition, e.g. speed, direction ( <a href="#">B06B 1/165</a> takes precedence)}
B06B 1/165	. . . . . {with fluid masses or the like}
B06B 1/166	. . . . . {Where the phase-angle of masses mounted on counter-rotating shafts can be varied, e.g. variation of the vibration phase}

- B06B 1/167 . . . {Orbital vibrators having masses being driven by planetary gearings, rotating cranks or the like}
- B06B 1/168 . . . . {Rotary pendulum vibrators}
- B06B 1/18 . wherein the vibrator is actuated by pressure fluid ([B06B 1/20](#) takes precedence)
- B06B 1/183 . . {operating with reciprocating masses}
- B06B 1/186 . . {operating with rotary unbalanced masses}
- B06B 1/20 . making use of a vibrating fluid {(whistles or sirens per se [G10K](#))}

**B06B 3/00** **Methods or apparatus specially adapted for transmitting mechanical vibrations of infrasonic, sonic, or ultrasonic frequency**

- B06B 3/02 . involving a change of amplitude
- B06B 3/04 . involving focusing or reflecting

**B06B 2201/00** **Indexing scheme associated with [B06B 1/0207](#) for details covered by [B06B 1/0207](#) but not provided for in any of its subgroups**

- B06B 2201/20 . Application to multi-element transducer
- B06B 2201/30 . with electronic damping
- B06B 2201/40 . with testing, calibrating, safety devices, built-in protection, construction details
- B06B 2201/50 . Application to a particular transducer type
- B06B 2201/51 . . Electrostatic transducer
- B06B 2201/52 . . Electrodynamic transducer
- B06B 2201/53 . . . with vibrating magnet or coil
- B06B 2201/54 . . . Electromagnetic acoustic transducers [EMAT]
- B06B 2201/55 . . Piezoelectric transducer
- B06B 2201/56 . . . Foil type, e.g. PVDF
- B06B 2201/57 . . Electrostrictive transducer
- B06B 2201/58 . . Magnetostrictive transducer
- B06B 2201/70 . Specific application
- B06B 2201/71 . . Cleaning in a tank
- B06B 2201/72 . . Welding, joining, soldering
- B06B 2201/73 . . Drilling
- B06B 2201/74 . . Underwater
- B06B 2201/75 . . Repelling animals, insects, humans
- B06B 2201/76 . . Medical, dental
- B06B 2201/77 . . Atomizers