COOPERATIVE PATENT CLASSIFICATION

PERFORMING OPERATIONS; TRANSPORTING

NOTES omitted

SEPARATING; MIXING

GENERATING OR TRANSMITTING MECHANICAL VIBRATIONS IN GENERAL

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

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the
scheme.

<table>
<thead>
<tr>
<th>1/00</th>
<th>Methods or apparatus for generating mechanical vibrations of infrasonic, sonic, or ultrasonic frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/02</td>
<td>making use of electrical energy (B06B 1/18, B06B 1/20 take precedence)</td>
</tr>
<tr>
<td>1/0207</td>
<td>[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)]</td>
</tr>
<tr>
<td>1/0215</td>
<td>{ for generating pulses, e.g. bursts of oscillations, envelopes }</td>
</tr>
<tr>
<td>1/0223</td>
<td>{ for generating signals continuous in time }</td>
</tr>
<tr>
<td>1/023</td>
<td>{ and stepped in amplitude, e.g. square wave, 2-level signal }</td>
</tr>
<tr>
<td>1/0238</td>
<td>{ of a single frequency, e.g. a sine-wave }</td>
</tr>
<tr>
<td>1/0246</td>
<td>{ with a feedback signal }</td>
</tr>
<tr>
<td>1/0253</td>
<td>{ taken directly from the generator circuit }</td>
</tr>
<tr>
<td>1/0261</td>
<td>{ taken from a transducer or electrode connected to the driving transducer }</td>
</tr>
<tr>
<td>1/0269</td>
<td>{ for generating multiple frequencies }</td>
</tr>
<tr>
<td>1/0276</td>
<td>{ with simultaneous generation, e.g. with modulation, harmonics }</td>
</tr>
<tr>
<td>1/0284</td>
<td>{ with consecutive, i.e. sequential generation, e.g. with frequency sweep }</td>
</tr>
<tr>
<td>1/0292</td>
<td>{ Electrostatic transducers, e.g. electret-type }</td>
</tr>
<tr>
<td>1/04</td>
<td>operating with electromagnetism (dynamo-electric motors with vibrating magnet, armature or coil system H02K 33/00)</td>
</tr>
<tr>
<td>1/045</td>
<td>{ using vibrating magnet, armature or coil system }</td>
</tr>
<tr>
<td>1/06</td>
<td>operating with piezo-electric effect or with electrostriction (piezo-electric or electrostrictive devices per se H01L 41/00)</td>
</tr>
</tbody>
</table>

1/0603 \{ using a piezo-electric bender, e.g. bimorph \} |
1/0607 \{ using multiple elements (B06B 1/064 and B06B 1/068 take precedence) \} |
1/0611 \{ in a pile \} |
1/0614 \{ for generating several frequencies \} |
1/0618 \{ of piezo- and non-piezo-electric elements, e.g. 'Tonpilz' \} |
1/0622 \{ on one surface \} |
1/0625 \{ Annular array \} |
1/0629 \{ Square array \} |
1/0633 \{ Cylindrical array \} |
1/0637 \{ Spherical array \} |
1/064 \{ with multiple active layers \} |
1/0644 \{ using a single piezo-electric element \ (B06B 1/068 takes precedence) \} |
1/0648 \{ of rectangular shape \} |
1/0651 \{ of circular shape \} |
1/0655 \{ of cylindrical shape \} |
1/0659 \{ of U-shape \} |
1/0662 \{ with an electrode on the sensitive surface \} |
1/0666 \{ used as a diaphragm \} |
1/067 \{ which is used as, or combined with, an impedance matching layer \} |
1/0674 \{ and a low impedance backing, e.g. air \} |
1/0677 \{ and a high impedance backing \} |
1/0681 \{ and a damping structure \} |
1/0685 \{ on the back only of piezo-electric elements \} |
1/0688 \{ with foil-type piezo-electric elements, e.g. PVDF \} |
1/0692 \{ with a continuous electrode on one side and a plurality of electrodes on the other side \} |
1/0696 \{ with a plurality of electrodes on both sides \} |
operating with magnetostriction (magnetostrictive devices per se H01L 41/00)

[using multiple elements, e.g. arrays]

making use of mechanical energy (B06B 1/18, B06B 1/20 take precedence)

operating with systems involving reciprocating masses

the masses being elastically coupled

operating with systems involving rotary unbalanced masses {electrical motors using rotary unbalanced masses in general H02K 7/061)}

[Adjustable systems, i.e. where amplitude or direction of frequency of vibration can be varied]

[Making use of masses with adjustable amount of eccentricity]

{the amount of eccentricity being only adjustable when the system is stationary (B06B 1/165 takes precedence)}

{the amount of eccentricity being automatically variable as a function of the running condition, e.g. speed, direction (B06B 1/165 takes precedence)}

{with fluid masses or the like}

{Where the phase-angle of masses mounted on counter-rotating shafts can be varied, e.g. variation of the vibration phase}

{Orbital vibrators having masses being driven by planetary gearings, rotating cranks or the like}

{Rotary pendulum vibrators}

wherein the vibrator is actuated by pressure fluid (B06B 1/20 takes precedence)

{operating with reciprocating masses}

{operating with rotary unbalanced masses}

making use of a vibrating fluid {whistles or sirens per se G10K)}

Methods or apparatus specially adapted for transmitting mechanical vibrations of infrasonic, sonic, or ultrasonic frequency

involving a change of amplitude

involving focusing or reflecting

Indexing scheme associated with B06B 1/0207 for details covered by B06B 1/0207 but not provided for in any of its subgroups

Application to multi-element transducer

with electronic damping

with testing, calibrating, safety devices, built-in protection, construction details

Application to a particular transducer type

Electrostatic transducer

Electrodynamic transducer

with vibrating magnet or coil

Electromagnetic acoustic transducers [EMAT]

Piezoelectric transducer

Foil type, e.g. PVDF

Electrostrictive transducer

Magnetostriuctive transducer

Specific application

Cleaning in a tank

Welding, joining, soldering