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Priority Date	Summary of Patent Application
2017-05-22	<ul style="list-style-type: none"> <li>• Fly approx. 30% further on the same battery in the same time than comparable fixed wing aircraft (increase range and cruise speed)</li> <li>• Aerodynamically more efficient than best avian flapping flight mode, or better than fixed wing aircraft with just wing morphing</li> <li>• VTOL</li> </ul>
2017-08-10	<ul style="list-style-type: none"> <li>• Increase helicopter hover time by any factor you want without changing size (e.g. 9 times increase in disc loading gives you approx. <math>\sqrt{9} = 3</math> times the hover endurance)</li> <li>• Reduce fuselage drag by large factor, increase top speed, can do it with moving parts (e.g. propellers) or without moving parts (e.g. ducts), works for aircraft, ships, cars, trains, trucks etc.</li> <li>• Reduce wing span for same induced drag</li> <li>• Operate wind turbine at maximum power at any wind speed, exceed Betz limit</li> </ul>
2017-11-10	<ul style="list-style-type: none"> <li>• Macroscopic perpetual motion machine of second kind, uses energy in environment (e.g. ambient air) and converts it into useful work (thrust, electricity)</li> <li>• Use a body force (like gravity) to get an artificial difference in temperature between two points (this is why a mountain top is colder than a mountain bottom), use a difference in specific heat capacity of two materials to get a difference in the difference in temperature between the two points, thus get a difference in temperature at the same point. Only using simple formula for enthalpy <math>dh = c_p dT = -g dz</math> (where <math>g</math> is the acceleration due to the body force and <math>dz</math> is the change in altitude between the two points, and <math>c_p</math> is the heat capacity, and <math>dT</math> is the change in temperature and <math>dh</math> is the change in enthalpy)</li> <li>• Use difference in temperature to generate heat flow, use heat flow to generate power</li> </ul>
2018-02-09	<ul style="list-style-type: none"> <li>• Microscopic perpetual motion machine of second kind</li> <li>• Similar to Brownian ratchet, but passive, no moving parts. Use geometry only.</li> <li>• Use focusing of objects (molecules, photons, phonons, electrons) to reduce entropy adiabatically, e.g. increase density without changing temperature, then use the increase in density and pressure to do work</li> <li>• Works with quantum vacuum. Generate thrust in vacuum of space using zero point energy. More speculative than other ideas.</li> <li>• Probably my best idea</li> </ul>
2018-02-15	<ul style="list-style-type: none"> <li>• Microscopic perpetual motion machine of second kind</li> <li>• Similar to 2018-02-09, but now use electromagnetic fields to help with the focusing</li> </ul>
2018-02-18	<ul style="list-style-type: none"> <li>• Microscopic perpetual motion machine of second kind</li> <li>• Similar to 2018-02-09, but now use electromagnetic fields to help with the focusing</li> </ul>
2018-02-23	<ul style="list-style-type: none"> <li>• Using manipulation of thermodynamic properties of quantum vacuum to modify relativistic quantities, such as gravity, rate of passage of time (low performance time machine, but better than a conventional rocket using special relativity). More speculative than other ideas.</li> </ul>

2018-05-03	<ul style="list-style-type: none"> <li>• Microscopic perpetual motion machine of second kind</li> <li>• Similar to 2018-02-09, but can now use more blunt tools in manufacture. Still using geometry to focus objects, but now geometry can be larger in size, or random in shape (e.g. can just use density gradient in your membrane material to get the focusing effect you want)</li> </ul>
2018-06-25	<ul style="list-style-type: none"> <li>• Microscopic perpetual motion machine of second kind</li> <li>• Direct electricity generation by using concept from 2017-11-10 and 2018-05-03 for electrons</li> <li>• Charges in semiconductor or conductor material subject to an electric field will form regions of accumulation and depletion of charge, size of regions depends on material properties, can generate difference in the difference in the charge density between two points in two different materials, and thereby generate a voltage difference between the same points, and thereby generate a net voltage and current flow (energy for current is provided by thermal energy of mobile charges)</li> </ul>
2018-06-27	<ul style="list-style-type: none"> <li>• Same as 2018-06-25, but for objects other than electrons (e.g. air molecules)</li> </ul>
2018-07-11	<ul style="list-style-type: none"> <li>• Macroscopic perpetual motion machine of second kind</li> <li>• Artificially change the specific heat capacity of the same material (e.g. using electric or magnetic field using electrocaloric or magnetocaloric effect) and let material do work or do work on material; difference in the specific heat capacities during compression compared to expansion cycle will allow you to get a net amount of work out of your material in exchange for cooling the material</li> <li>• 40.000 horsepower possible, for example. Can be used as perpetual motion ramjet that works at subsonic and supersonic speeds</li> </ul>
2018-10-22	<ul style="list-style-type: none"> <li>• Silent supersonic VTOL aircraft, no shock waves, similar to 2017-08-10</li> <li>• Generate lift within a subsonic or transonic flow regime using wing inside a duct. Duct decelerates flow to subsonic flow, wing generates lift and transfers vertical momentum into the air, duct then accelerates air again, and vertical momentum remains in the air</li> <li>• Duct needs to be large enough in diameter to expel vertical momentum out of duct before it impinges on duct walls, but wing can be very small due to extremely large mass flow rate through duct at supersonic speeds</li> </ul>
2018-12-03	<ul style="list-style-type: none"> <li>• Microscopic perpetual motion machine of second kind</li> <li>• Rarefied flow thermodynamics different to normal thermodynamics. Gas experiencing body force acting on microscopic scales not subject to same macroscopic thermodynamic behavior, can exploit difference from Maxwell-Boltzmann statistics on microscale (essentially rarefied flow), use difference in difference in pressure, temperature, and density between two points to get a net difference in pressure, temperature, and density at the same point; thus change entropy adiabatically, generate power</li> </ul>

2019-06-08	<ul style="list-style-type: none"> <li>• Macroscopic perpetual motion machine of second kind</li> <li>• Same as 2017-11-10, but use acoustic waves instead of thermal conduction to travel through material subject to body force, acoustic waves much faster than thermal conduction, so more power extraction possible</li> <li>• Can also be understood mechanistically: gas subject to body force does work on high pressure side (e.g. against piston), piston thinks there is more gas than there actually is, so gas does more work per unit mass, so gas cools down more than normal; or work is done on gas subject to body force on low pressure side (e.g. by piston), so piston thinks there is less gas than there actually is, so piston does less work per unit mass, so gas does not heat up as much as normally; in both cases result is specific entropy reduction of gas</li> </ul>
2019-08-14	<ul style="list-style-type: none"> <li>• Microscopic perpetual motion machine of second kind</li> <li>• Same as 2018-02-09, but accelerate objects sideways along a surface instead of through a membrane, e.g. can be used on the surface of a fuselage to generate negative drag (thrust)</li> </ul>
2019-11-12	<ul style="list-style-type: none"> <li>• More examples for idea from 2017-08-10</li> <li>• Turbofan engines with increased mass flow rate for takeoff and low speed flight</li> <li>• Increased mass flow rate for ramjet</li> </ul>
2019-11-14	<ul style="list-style-type: none"> <li>• More examples for idea from 2019-08-14</li> </ul>
2020-01-31	<ul style="list-style-type: none"> <li>• VTOL aircraft, or flying car, for 7 passengers, for example. Features four swiveling ducted propulsion units using 2017-08-10 idea and doubly folding wings for storage.</li> </ul>