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(54) Title: MECHANICAL OSCILLATOR SYSTEM

(57) Abstract: A mechanical oscillator system comprising a balance wheel and a spiral or helicoidal balance spring for use in horological mechanisms or other precision instruments. The balance spring is made of a non-magnetic composite, polymer, carbon or ceramic material, preferably a composite material of carbon fibres in a polymer, carbon or ceramic matrix, and the balance wheel is made from a non-magnetic ceramic. The values of the thermal expansion coefficients for the balance spring and balance wheel are similar, very small and stable over a wide temperature range. The expansion coefficients in the axial sense of the spring and of the balance wheel are of opposite sign and they compensate one another. The density of these materials is smaller than that of the currently used metals. Through this combination of materials it is possible to obtain significant advantages and a higher level of accuracy and stability compared with metal oscillator systems.

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