CLAIMS

What is claimed is:

1. An apparatus for interacting with a working material, wherein the apparatus comprises:

a body force generating apparatus configured to artificially modify a specific heat capacity of the working material; and

a work exchange apparatus, wherein the work exchange apparatus comprises a compression apparatus, where a compression apparatus is an apparatus configured to do work on the working material, or wherein the work exchange apparatus comprises an expansion apparatus, where an expansion apparatus is an apparatus configured to allow the working material to do work on the expansion apparatus

2. The apparatus of claim 1, wherein the body force generating apparatus is configured to increase the specific heat capacity of the working material

3. The apparatus of claim 1, wherein the body force generating apparatus is configured to decrease the specific heat capacity of the working material

4. The apparatus of claim 1, wherein the working material comprises solid particles, or a solid object

5. The apparatus of claim 1, wherein the working material comprises of a fluid, such as a liquid, a gas, or a colloid

6. The apparatus of claim 1, wherein the working material comprises electrons

7. The apparatus of claim 6, wherein the specific heat capacity of electrons is modified by the body force generating apparatus

8. The apparatus of claim 1, wherein the body force of the body force generating apparatus is gravitational in nature

9. The apparatus of claim 1, wherein the body force of the body force generating apparatus is inertial in nature

10. The apparatus of claim 1, wherein the body force generating apparatus comprises a magnetic field generating apparatus

11. The apparatus of claim 10, wherein at least a portion of the magnetic field is generated by current flowing through a conductor

12. The apparatus of claim 11, wherein at least a portion of the conductor is superconducting

13. The apparatus of claim 11, wherein at least a portion of the conductor is arranged around or within at least a portion of the working material in solenoidal fashion

14. The apparatus of claim 10, wherein at least a portion of the magnetic field is generated by a permanent magnet

15. The apparatus of claim 10, wherein the body force generating apparatus comprises an electric field generating apparatus

16. The apparatus of claim 15, wherein the electric field generating apparatus comprises electrical conductors configured to accumulate positive or negative charge

17. The apparatus of claim 15, wherein the electric field generating apparatus comprises collections of positive or negative charge

18. The apparatus of claim 1, wherein the body force generating apparatus comprises an ionization apparatus configured to ionize at least a portion of the working material

19. The apparatus of claim 18, wherein at least a portion of the energy consumed in an ionization process can be recovered

20. The apparatus of claim 19, wherein at least a portion of the energy is recovered by a work exchange apparatus configured to allow the working material to do work on the work exchange apparatus

21. The apparatus of claim 20, wherein the work exchange apparatus comprises an electrical generator

22. The apparatus of claim 1, wherein the specific heat capacity of a working material is modified by a positive or negative magnetocaloric effect

23. The apparatus of claim 1, wherein the specific heat capacity of a working material is modified by a positive or negative electrocaloric effect

24. The apparatus of claim 1, wherein the work exchange apparatus comprises an axial or centrifugal compressor or turbine

25. The apparatus of claim 1, wherein the work exchange apparatus comprises a reciprocating piston

26. The apparatus of claim 1, wherein the work exchange apparatus comprises a body force generating apparatus

27. The apparatus of claim 26, wherein the body force generating apparatus comprises an electric field generating apparatus

28. The apparatus of claim 26, wherein the body force generating apparatus comprises a magnetic field generating apparatus

29. The apparatus of claim 26, wherein the body force generating apparatus comprises a gravitational field generating apparatus

30. The apparatus of claim 26, wherein the body force generating apparatus comprises an inertial body force generating apparatus

31. The apparatus of claim 1, wherein the work exchange apparatus comprises a duct through which a fluid working material is configured to flow

32. The apparatus of claim 31, wherein the duct is a converging diverging duct

33. The apparatus of claim 31, wherein the duct is a diverging duct

34. The apparatus of claim 31, wherein the duct is a converging duct

35. A method of interacting with a working material, the method comprising: artificially modifying the value of a specific heat capacity of a working material relative to the natural value; and employing a work exchange apparatus to do work on the working material, or employing a work exchange apparatus to allow the working material to do work on the work exchange apparatus

36. The method of claim 35, wherein the method further comprises providing a body force generating apparatus, where the body force generating apparatus is configured to artificially modify a specific heat capacity of a working material

37. The method of claim 35, wherein the method further comprises employing the body force generating apparatus to artificially modify a specific heat capacity of a working material

38. The method of claim 35, wherein the method further comprises providing the work exchange apparatus

39. The method of claim 35, wherein the method further comprises maintaining the value of a specific heat capacity at any value different to the natural value of the specific heat capacity during an employing of a work exchange apparatus to do work on the working material, or an employing of a work exchange apparatus to allow the working material to do work on the work exchange apparatus

40. The method of claim 39, wherein the method further comprises maintaining the value of a specific heat capacity at the natural value of the specific heat capacity during an

employing of a work exchange apparatus to do work on the working material, or an employing of a work exchange apparatus to allow the working material to do work on the work exchange apparatus