History pages

Systems of conversion of thermal energy to mechanical one

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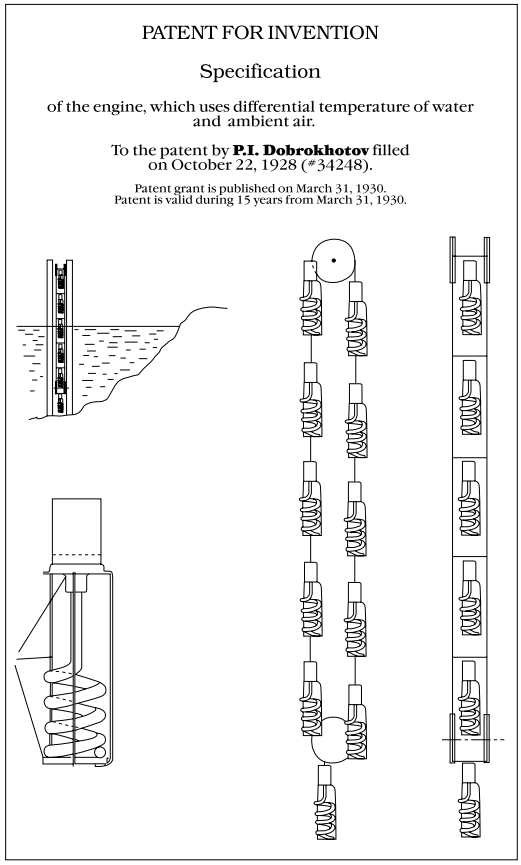
There is a wide class of closed-cycle heat engines using differential temperature of water and ambient air. This kind of systems enables thermal energy to be directly converted to mechanical one so as to perform a useful work. We publish patent specifications of two analogous devices of this kind.



PATENT FOR INVENTION

Specification

of the engine, which uses differential temperature of water and ambient air.

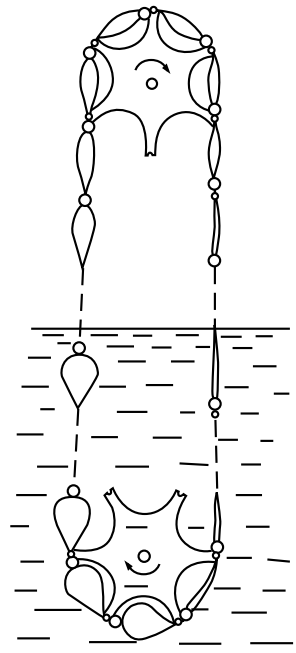
To the patent by **P.I. Dobrokhotov** filled on October 22, 1928 (#34248).

Patent grant is published on March 31, 1930.
Patent is valid during 15 years from March 31, 1930.

In 1928 **P.I. Dobrokhotov** proposed a design of such an engine. It represents an endless chain thrown over a pair of blocks and partly immersed into water. The chain consists of coiled pipes filled with a volatile liquid (such as sulfurous anhydride or ammonia). One end of each coil is fastened to a frame, while another end is fastened to a cylinder piston mounted on the same frame. When overwater elements are heated by means of ambient air, the liquid inside the coil evaporate. Vapor put pressure upon the pistons which being in motion compress air in the cylinder, and thereby reduce volume of each element. When submerging, the element gradually cools down, thereupon causing a decrease in pressure of vapor of the liquid, which is enclosed within coils. The pistons move in backward direction, and the volume of air available inside the cylinder increases. Increase of volume results in increase of water buoyancy force that sets the device in motion.

INVENTION SU1404681 A1

23.06.88
Yu.S. Grigoryev
Prototype: USSR patent #13534
F 03 G 7/06, 1928



In 1980, **Y.S. Grigoriev** developed his forerunner's idea by improving the system described above. The inventor aspired to enhance the effectiveness of this method of conversion of heat energy to mechanical one. He suggested fixing the volume of chambers filled with a heat-sensitive actuating medium at its minimal magnitude before immersing of those chambers into warm water. In water the actuating medium heats and partially evaporates. At a maximum depth of submersion, the chambers are released from fixation to be expanded during emersion. Thus one may avoid expansion of the chambers during their submersion. Futhermore, there is a possibility to activate the device and get the useful work without preliminary spinup from an external drive.