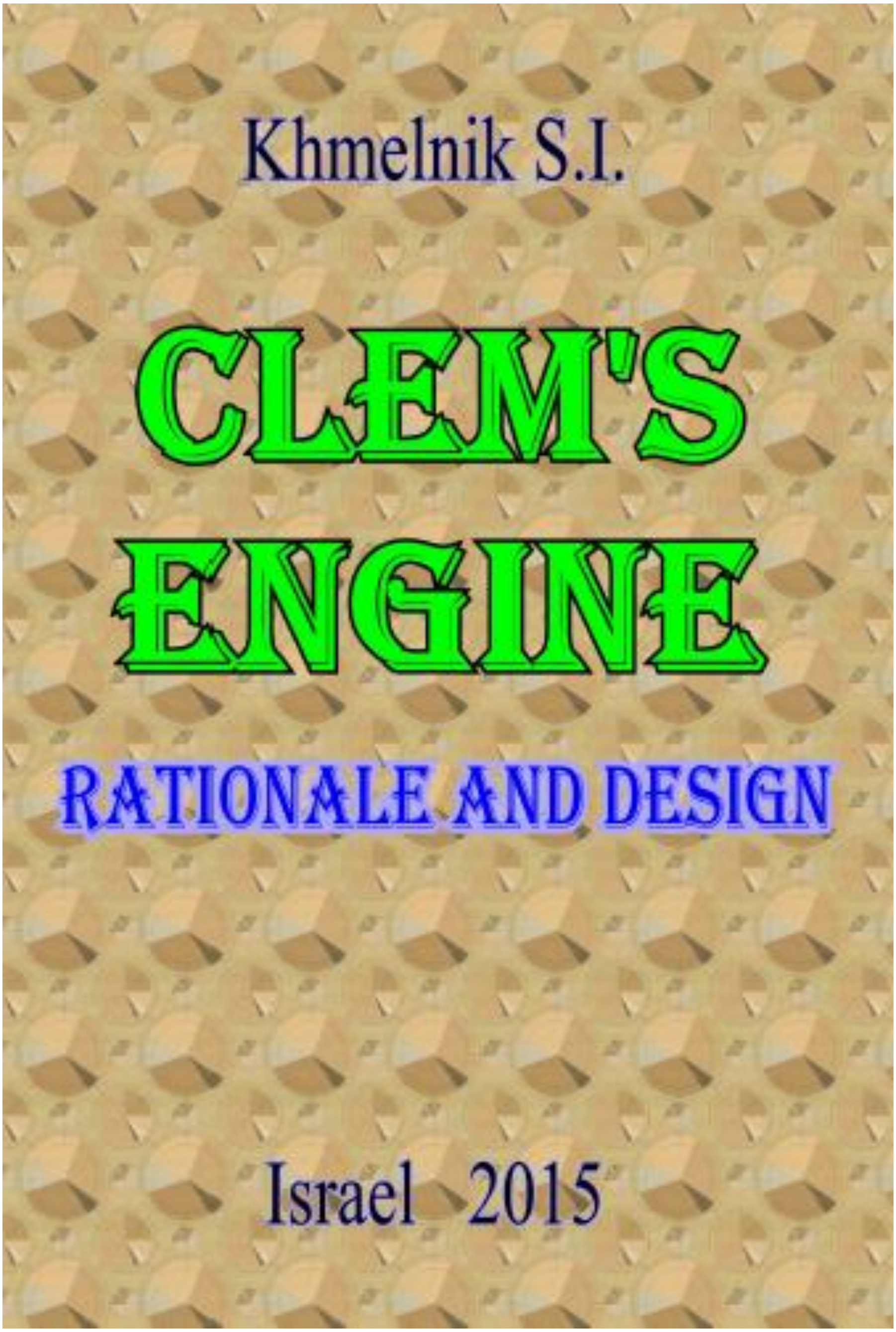
Khmelnik S.I.
CLEM'S
ENGINE
RATIONALE AND DESIGN
Israel 2015

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Clem's engine

Rationale and design

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Annotation

Clem's engine project is proposed. The project contains:

1. Theory (within the existing physical paradigm)
2. The method of calculation
3. The calculation program in the MATLAB user instructions,
4. Example of calculation
5. Variants of embodiment,
6. The guidelines for choosing the working liquid,
7. The guidelines for choosing the design parameters,
8. Experimental device description (to determine the unknown constants and to prove the feasibility of the engine) with the instruction to perform the experiments.

The book buyer

- *can contact the author with questions;*
- *can get help by performing calculations,*
- *could receive the next edition of paying 5%.*

Contents

Preface

There is a known Clem's engine (hereinafter - **CE**), which is briefly described in the appendix 1. The existence of this engine has not been questioned and there were numerous efforts to repeat it. However (as far as the author knows) nobody yet succeeded to achieve it, despite that its construction has been described in detail. The basic question in its analysis remains the source of energy. Without this it is impossible to build a calculation model and to perform its design.

In our project we shall name the source of energy in **CE**. On this base the calculation model of **CE** will be built.

Some data about the **CE** *project:*

1. The theory of **CE** existence does not contradict the modern physical paradigm.
2. The proof of the possibility of building **CE** is in its history (see [3]), and the failures in the building attempts were caused by the fact that some important conditions have not been fulfilled:
    - The fluid should exhibit certain properties (for instance, simple water cannot serve as working fluid, which explains many failures in building **CE**),
    - design parameters (cone shape, a step helix angle of inclination of the turns, the channel length) should be combined in a certain way: some combinations are optimal, and some simply unefficient
3. **CE** can be installed on a car and not consume any fuel.
4. Manufacturing CE does not present any principal difficulties.
5. Components of **CE** can be made on request.
6. The referred above mathematical model of **CE** permits to compute
    - constructive parameters of **CE** (dimensions, cone shape, fluid volume etc);
    - its operational characteristics (start pressure, rotational speed, pressure, load characteristic etc.),
    - to propose constructive changes in the design of the engine.
7. Some modifications ready to patenting have been developed.

8. Certainly for practical use of this model a series of experiments s quite necessary – it should be done because some of the model's parameters cannot be determined beforehand.
9. The layout and procedure are already developed for an experiment for which it would be sufficient to make a simplified version of **CE** (to confirm the principle of functioning).

1. Schematic Diagram of CE

The schematic diagram of KE is shown on Fig. 1, where:

1. cone with spiral tube and spiral channel,
2. camera,
3. working fluid,
3. working fluid flow,
4. pump,
5. electrical generator,
6. shaft for cone and electrical generator connection,
7. starter,
8. load,
9. circuit.

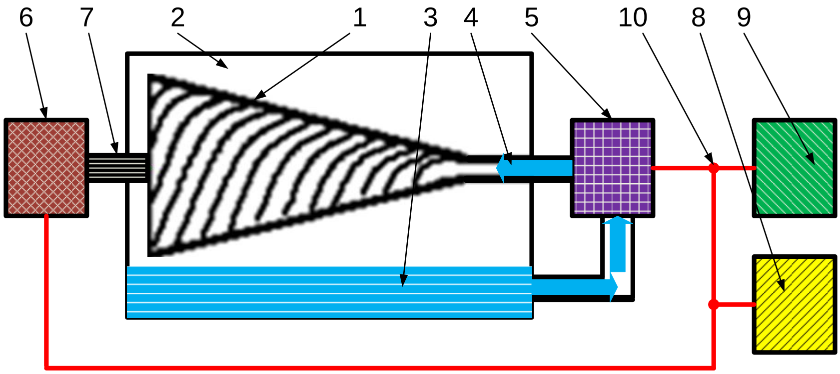

Fig. 1.

CE functions as follows.

Starter 8 spins the pump 5, which pumps the working fluid 3 from camera 2 into spiral tube on the cone 1. The working fluid flow 3 when passing the spiral tube gains additional kinetic energy (its source is considered in the project). The working fluid 3 emits from the tube. At this moment kinetic energy of the working fluid 3 is transformed into kinetic energy of the rotation of cone 1. The cone 1 through the shaft 7 rotates the electrical generator 6. Its electrical energy by the circuit 10 is transmitted to the pump 5 and to the load 9. After this the starter 8 is disconnected

The user of this project can change this diagram at his own discretion. In this project **only** the following parts are considered:

1. the cone with spiral tube, their configuration and dimensions,
2. the working fluid composition and its technical properties,
3. the CE energetics – the energy source, the output power.

2. The Spiral Line

The main part in CE is the spiral tube shown on the Fig. 1, where R and Z are the maximal radius and the height, accordingly. Further we shall be using cylindrical coordinates system. The Figure shows the positive coordinates directions r, φ, z. The tube can be wound **counter**clockwise and then the coordinate z grows with the growing of the angle φ. In this case we shall talk about a left-hand tube. The tube can be wound **clockwise** and then the coordinate z will grow with the growing of the angle $|\varphi|$, but then $\varphi < 0$. In this case we shall talk about a right-hand tube. The Figure shows a right-hand tube.

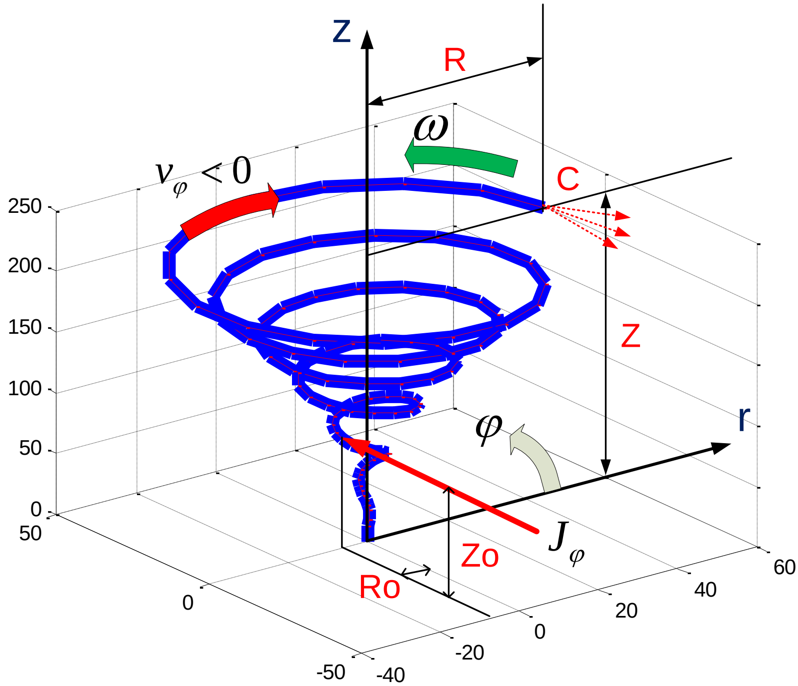

Fig. 1.

The tube has a certain diameter d. Further in our calculations we shall assume that $d << R$.

The working fluid is flowing along the tube with a certain speed v_φ. In our coordinate system $v_\varphi > 0$ or $v_\varphi < 0$ in the left-handed or right-handed tube accordingly.

The input fluid flow– mass current enters the tube in the point with coordinates $r = 0,\ \varphi = 0,\ z = 0$. This current flows first vertically up. But in a certain point with coordinates $r = R_o,\ \varphi = \varphi_o,\ z = Z_o$ it becomes practically a current directed tangential to a circle. Further it will be denoted as J_φ. The specified point is the calculated input point.

The liquid comes out of the tube from the endpoint C – from the nozzle C, and transmits its kinetic energy to the tube. The design of CE is made in such way that the tube (together with the cone) can rotate around its axis, and it rotates with a certain angular speed ω counterclockwise if the tube is left-handed and clockwise if the tube is right-handed.

The form of the tube is described by the following two functions:

$$r = r(z), \tag{1}$$

$$\varphi = \varphi(z). \tag{2}$$

Function (1) describes the line – a generator of the body of revolution on which the tube is wound. If (1) is a straight line equation, then the body is a cone, and the tube is a cone spiral line. If (1) is a parabola equation, then the body is a paraboloid, and the tube is a parabolic spiral line.

> The first problem of CE design is the determination of the form of the functions (1, 2) and the direction of tube winding. The region of options is quite limited!


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