**Subject:**

Brockhaus* 1839 [1]: “Perpetual motion machine: a machine which, thanks to the driving force which is generated by it, would remain in a steady motion, but whose realization is now thought to be impossible, since well-known laws of nature speak against it. In former times, together with the philosopher’s stone, the elixir of life etc. It belonged to the things on which charlatans were preening themselves and whose discovery was the ambition of mechanicians and mathematicians.”

Brockhaus 1910 [2]: “Perpetuum mobile (Latin), a body that moves incessantly, in particular an aspired device that is shown to be impossible due to the law of the conservation of energy, which would be able to renew its force thanks to its own movement.”

Brockhaus 1953 [3]: “Perpetuum mobile of the first kind, a machine which supplies energy steadily without the need of any work; is in contradiction to the empirical law of the conservation of energy.”

A publication of the Federal patent office from 1985 [4]: “the federal patent court points to the ‘energy conservation law which is recognized and unrebuted in the whole of natural sciences’ according to which ‘energy cannot be created or destroyed in any physical process’, but it can only ‘be converted from one form into another’.

**Deficiencies:**

The assertion that a perpetual motion machine (PM) of the first kind cannot work because it would violate the energy conservation law, falls somewhat short of the mark.

Imagine you don’t know the energy conservation law and you would like to prove that a perpetual motion machine that has been proposed by someone, cannot work, without trying it experimentally. It will be easy to provide evidence, since apart from the energy conservation law there are always other laws which are also violated: other conservation laws, Maxwell’s equations, the Law of Gravitation etc. Mechanical perpetual motion machines usually violate Newton’s laws, i.e. the law of the conservation of momentum, or they violate the law of the conservation of angular momentum.

The well-known discussion among physicists about why a certain smart proposal of a perpetuum mobile doesn’t work also show that energy conservation is not the only obstacle. Although the discussants know perfectly that energy conservation is violated they consider the refutation satisfying only when yet another reason is found, i.e. the violation of another physical law.

Indeed the energy conservation law is a practical tool for showing that a certain process cannot occur. But it does not play a distinguished role in our context.
Origin:
Since it is the stated objective of the PM inventors to violate the energy conservation law, it is suitable to argue with this law in order to refute the realizability of such a machine. Apparently, PM inventors, who can be found even at the present time, have not too much fantasy. They only focus on devices that violate energy conservation. The reason might be that they consider energy a precious merchandise. They seem not to understand, that they can make just as much money by violating any other law of physics.

Disposal:
Perpetual motion machines (which do not work) are nice and profitable subject for physical discussions. One should not dismiss the theme by saying that the law of energy conservation is violated. Then the impression will result that the structure of physics is such that one can imagine a world in which the laws of physics are the same as in our world except for any one law which has been replaced with another one.

*Brockhaus* is a time-honored German encyclopedia.


*Friedrich Herrmann, Karlsruhe Institute of Technology*