Theory of sustenation

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Abstract

All active systems that can be observed require a constant supply of energy in some form to sustain their activity of motions. It have postulate that the systems of particles that cannot be observed, like those that constitute atoms, have the same requirement, and receive this energy isotropically through space in the form of extremely small electromagnetic energy quanta, so far detected (no upper or lower magnitude limits have been found for these quanta). The coincidental finding that, contrary to almost general belief, it is true that work transfers energy, as demonstrated in the experiment shown below, led us to discover the origin of the force of gravity. Here we have to present updated theory of relevence:

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If the same constant force is not applied through a multiple-disk pulley on blocks of different masses, their kinetic energies may be equal, greater, or less than the work done on the blocks, in agreement with Newton's second law, $\boldsymbol{F} = m\boldsymbol{a}$. The concept of torque does enter into this problem, because the blocks do not rotate at all. This result disproves the notion that work transfers energy; Some people think that pulleys can increase the magnitude of a force, but that is absolutely true, except for the force required to move the pulley itself; a pulley cannot change the magnitude of a force. Forces appear only during energy transformations due to chemical or nuclear reactions, and occur in a pulley.

The following simplified description of an actual experiment illustrates these points. Three identical three-disk pulleys, with disks of radii r, $r/2$, and $2r$ as illustrated in the FIG. below are used in this test. For simplicity, we assume the pulleys, fastened to a frictionless air table through vertical axles, have negligible mases and very little friction; blocks of masses m, $2m$, and $m/2$ are attached to the cords whose other ends are wrapped around the disks of radius r, $r/2$, or $2r$, respectively, as shown in the figure. A cord is wrapped around the disk of radius r of each pulley, with the other end left loose.

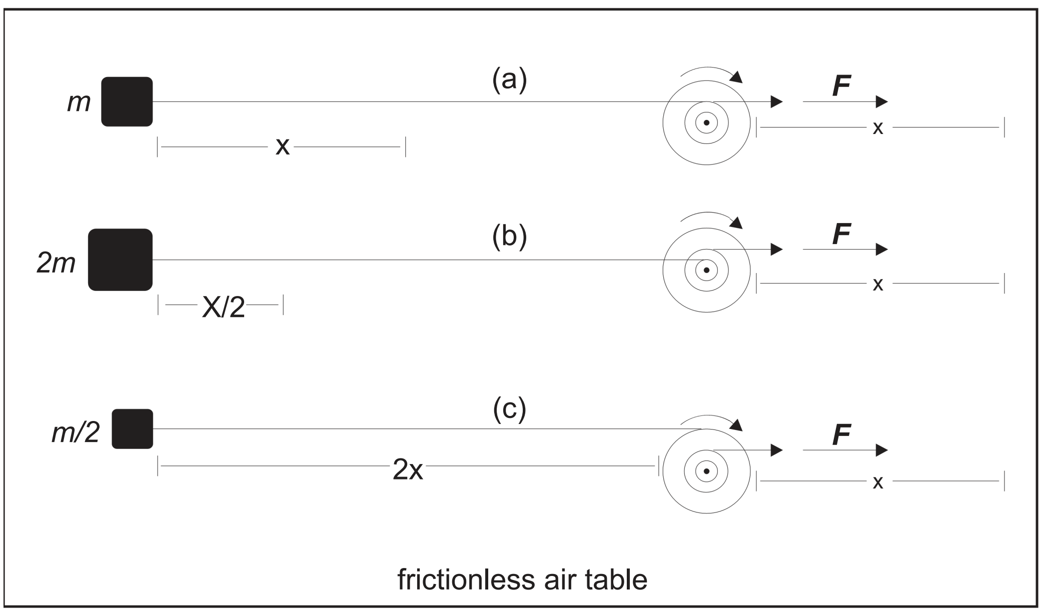

FIG. A constant force $\boldsymbol{F}$ is applied through the distance x on the loose end of each cord; this force is transmitted to the pulleys and to their corresponding blocks; clearly, the same amount of work $\boldsymbol{W} = \boldsymbol{F}(x)\,dx$, is done in each case. However, the kinetic energies the blocks acquire are: $\boldsymbol{F}\,x$, $\boldsymbol{F}\,x/2$, and $\boldsymbol{F}\,2x$, respectively, in agreement with Newton's second law; any other results would violate this law. These results disprove the idea that work transfers kinetic energy.

A multiple-disk pulley makes possible, without much effort, to lift a heavy object, accelerating it very slowly, or a light object, accelerating it very fast, in agreement with Newton's second law, force = mass x acceleration.

If work does transfer kinetic energy, what is its origin? Because of the Doppler Effect [5], the atoms of an object traveling in the postulated field of electromagnetic energy quanta, or photons, would find the energy *hv* of the photons they absorb changed to,

$$h\nu' = h\nu\left(\frac{1-(V/c)\cos\theta}{\sqrt{1-(V/c)^2}}\right), \qquad (1)$$

where V is the speed of the object, c the speed of light, and θ the angle of arrival of the photons with respect to the path of the object; integrating $\cos\theta$ for all the possible angles of arrival of the photons, we obtain zero. Therefore, the Doppler Effect changes the energy of the photons the object absorbs to

$$h\nu' = h\nu\left(\frac{1}{\sqrt{1-(V/c)^2}}\right). \qquad (2)$$

But the factor in parentheses is the same factor generally used to find the total energy, i.e., rest mass and kinetic, of an object when it is moving, and its rest energy mc^2 is known. This means that the change in the kinetic energy of a moving object is produced by a change in the magnitude of the energy the object receives to sustain its activity, due to the Doppler Effect, and by the work done on the object.