Work,energy,and efficiency: pulleys - lab report example

Science, Physics

Work, Energy, and Efficiency: Pulleys

Work, Energy, and Efficiency: Pulleys The objective of this experiment is: To explore the use of pulleys inmaking work easier.

To find out mechanical advantage and efficiency of various pulley system

To find out if there is energy conservation in a pulley system.

To investigate the effect of friction of the pulley system on work done.

To investigate the relationship between ideal mechanical advantage and number of stands supporting the mobile pulley.

Discussion/Conclusion

Pulley is a simple machine which does the heavy work using less effort. The pulley is arranged differently so as to come up with different number of string holding the load.

Single fixed pulley has one string attached to the load; single movable has two strings attached to the load while double movable pulley has three string attached to the load. This bring about different in work done since the string share the amount of effort applied to the load. The increase the efficiency of double movable pulley (1. 24) followed by single movable pulley (2. 1) the lastly single fixed pulley (1. 74).

Each pulley in the system cause friction and hence increases the total energy applied in the lifting of loads; double movable pulley has the most friction (0. 26) which has four pulleys followed by single movable pulley (0. 11) then lastly single fixed pulley (0. 03) which has only one pulley.

Pulley increases the efficiency in doing work and more so when using single movable pulley with efficiency of 2. 1.

The force applied reduces with an increase in number of pulleys. For

example, single fixed pulley has 2. 254N while double movable pulley has 0. 49N.

Work done on pulley configuration, increases with the number of stands. Single fixed pulley has (0. 045) while double movable pulley has (0. 47).

Energy is used on the load and another is used against frication, When they are summed, total energy used is obtained hence there no energy is conserved in the pulley system. I. e. Mf + Mo= Ma.

Most of the experiment objectives were met. The experiment was done with caution and no assumption where made in the experiment. For example, neglecting the friction effect in the pulley configuration.

As the number of stands increases, the IMA also increases in the pulley system.

For example, IMA N (number of stands)

Single fixed pulley 0. 5 1

Single movable pulley 0. 67 2

Double movable pulley 0. 8 4

Pulley of IMA of 3

Reference

Keighley, H. J. P. Mastering physics. Basingstoke: Macmillan, 1986. Print.