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Examples of Write–ups of the Exhibits

Two Examples of Write–ups of the Exhibits Displayed in Earlier Exhibition are Given Below to Facilitate Students to Develop the Write–up of their Exhibit

A. New Paddy Thresher

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Teacher : Robindro Singh

Introduction

In most of the agricultural land area of Manipur, people mainly cultivate paddy. The agriculture sector contributes a major share of the total state domestic product. It provides employment to about half of the total farmers in Manipur. During harvest, farmers spend a lot of money on labour charges to thresh the paddy. In view of this, an eco–friendly machine (model) called 'New Paddy Thresher' is developed. 'New Paddy Thresher' is a manual threshing machine. It can thresh the paddy plants without cutting the straws. Such an eco–friendly machine will help the poor farmers of the country in general and farmers of Manipur in particular to improve their economy.

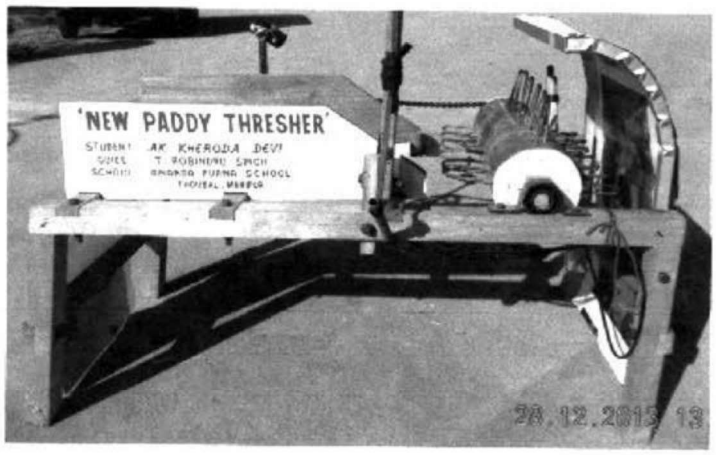

Figure 1: New Paddy Thresher

Material Required

The materials used in this exhibit is U–shaped beating rods; Bearing; Crank shaft; Iron chain; Wood; Bolts and nuts; Paddles; Paddy straw fixers.

Scientific Principle Involved

New Paddy Thresher' is based on the principle of the pulley and Lever system.

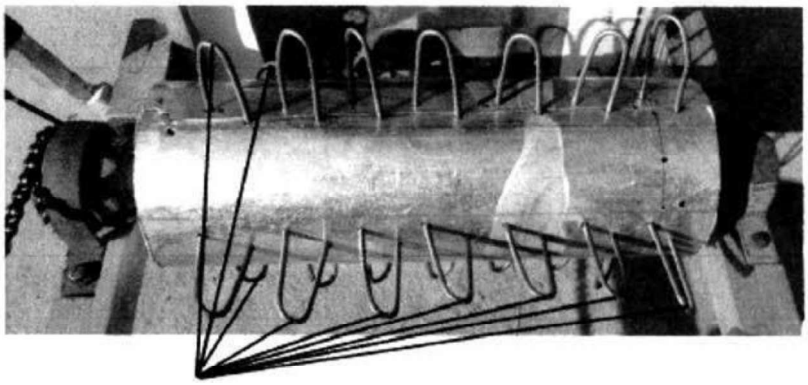

Figure 2: U–Shape Beating Rods

Construction and Working

Four rows of U–shaped beating rods are fixed on a cylinder. The two ends of the beating cylinder are fixed by two bearings so as to rotate freely. A pulley is fixed on one end of the beating cylinder and joins the crankshaft with the iron chain. In one complete rotation of the crank, the beating cylinder rotates twice. An armful of paddy straw can be beaten eight times in one complete crank rotation. Three crank rotation is enough forthreshing one armful of paddy.

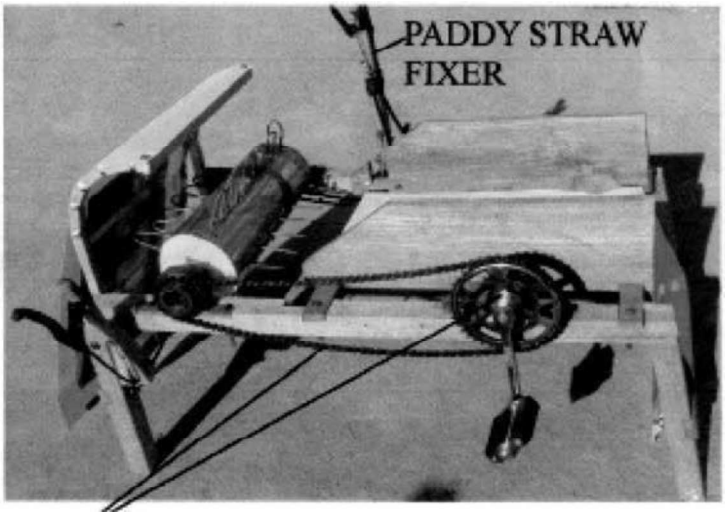

Figure 3: Crank Shaft with the Iron Chain

Advantages

(i) It is low-cost and portable.
(ii) It is an eco–friendly machine.
(iii) A farmer can save labor and money by using this thresher.

A. Vehicular Exhaust Filter

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Introduction

We know that many vehicles are increasing air pollution which increases global warming or the temperature of the earth. Many steps have been taken to reduce the emission level of gases coming out from the vehicle exhaust. We can see in heavy traffic areas the level of air pollution is very high. We feel uncomfortable and even feel itching in our eyes in such areas. Increasing air pollution is a danger sign for all living organisms on earth. Exhaust gases coming out from all types of automobiles contains mainly carbon mono–oxide, carbon dioxide, nitrogen dioxide, hydrocarbons, Sulphur dioxide and other harmful gases. These gases are very harmful for our environment and ecological system. This project is an attempt to solve the problem of high pollution level in cities due to automobiles in heavy traffic areas. This project helps us to reduce the air pollution caused by the vehicles.

Scientific Principle Involved

In the cooling chamber, two aluminium plates which have a charge on them attract dust particles. The exhaust gases are pushed by the exhaust fan on the nets made of synthetic fibers and a solution of sodium hydroxide (NaOH) is sprayed by the sprayer. NaOH reacts with harmful exhaust gases and neutralizes them. This way, the level of polluted air is very low.

Materials Required

Bottles of two-liter capacity, T–shaped water pipe joint, two exhaust fans, aluminum foil, NaOH solution, sprayer, battery, etc.

Construction and Working

In this project, the exhaust gases are collected in the cooling chamber (the shape of the cooling chamber is like a frustum) where due to the expansion of gases their temperature becomes low. In the cooling chamber, there are two aluminium plates which create a charge on them and attract the acidic/basic dust or harmful particles and then an exhaust fan sucks the gases and pushes the gases in the NaOH treatment chamber. We can identify it in Figure 4 where the NaOH reacts with harmful gases and makes them neutral. There is a machine called a sprayer placed after the exhaust fan which sprays NaOH on the nets of synthetic fibers after every 2 km distance period when the vehicle is running.

In the vertical chamber, the remaining dust particles are separated by an exhaust fan which pushes the gases on a filter so the heavy solid harmful particles settle down. Then the remaining gases are again treated with NaOH. We can identify it in Figure 5. Finally, cool and fresh air with very low air pollution comes out and spreads out in the environment.

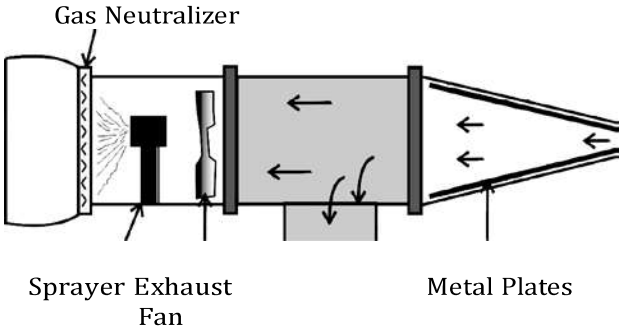

Figure 4

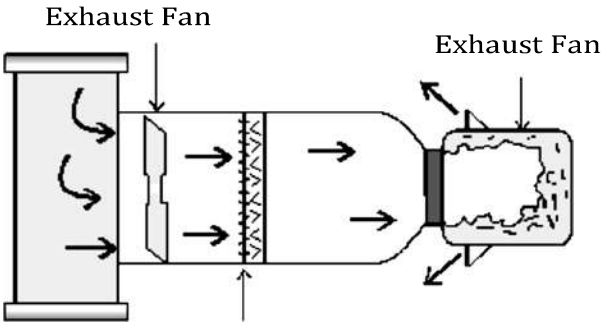

Figure 5

Removal of Harmful Particles/Chemicals

Take out the nets of synthetic fibers and wash them in NaOH solution to remove solid sediments and harmful chemicals periodically.

Result

It ensures lowering of the pollution level in air due to automobiles. So, we can save our earth from pollution.