

DESIGN AND FABRICATION OF EASY TO HANDLING HAND PUMP SYSTEM USING QUICK RETURN MECHANISM

ABSTRACT:

Now days India suffering from big problem like human power and electric power. Generally, water lift by using motor. Which takes huge amount of man power along with an electricity consumption. In our project we have planned to design a hand pump which is activated with a help of quick return mechanism powered by hand lever.

A water system includes a Centrifugal pump operated by quick return mechanism powered by hand lever. It works on the principle of vacuum created in centrifugal pump. These system operates the centrifugal pumps for lifting the water from 15 feet depth.

INTRODUCTION:

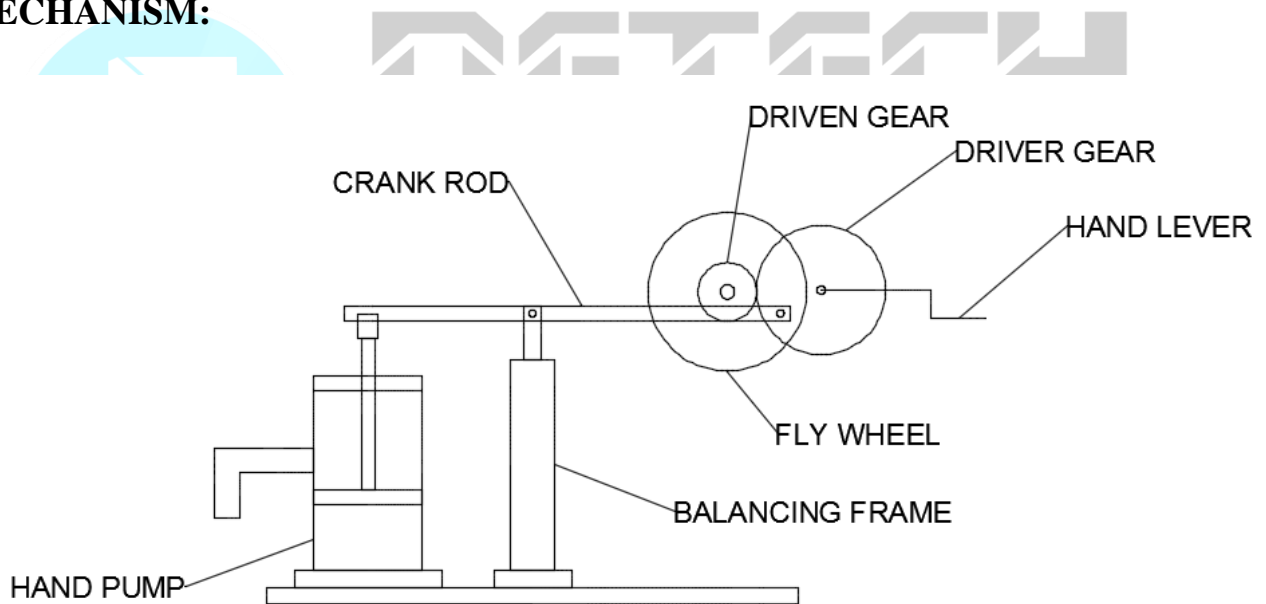
The ever increasing demand for energy has led to the formation of various advanced resources which produces a certain part of the required energy. One principal consumer of a large amount of energy is our household itself. Large amount of electrical energy is wasted in pumping water, irrigation purposes etc. It is in this context the importance of pendulum pump arises, by the use of which a large amount of energy can be conserved and the conserved energy can be used for various other purposes.

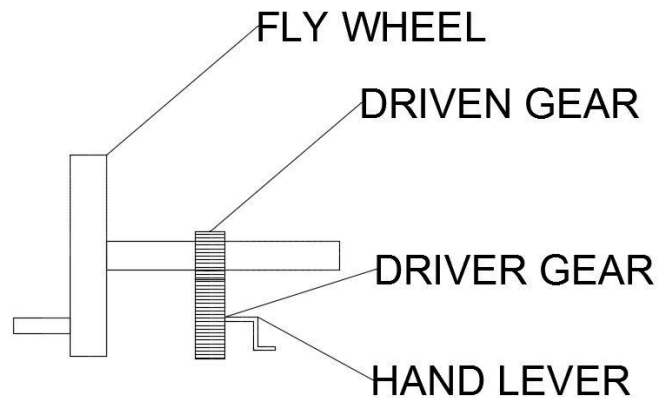
A pump is a device that can be used to raise or transfer fluids. Pumps are selected for processes not only to raise and transfer fluids from one point to another, but also to meet some other criterion. This other criterion may be to obtain a constant flow rate or constant pressure according to the requirement.

The main importance of a pendulum pump is that the initiation energy for starting the process of pumping, swinging of the pendulum, is considerably minimum when compared with the work required to operate hand pumps.

Typical hand pumps require sufficiently large effort and an average person can use the pump continuously only for a short time, but the pendulum pump requires only minimum of the effort, because it is only required to oscillate the pendulum and can maintain these oscillations for several hours, without any fatigue. The advantage of this invention compared to present hand pump solutions are: less force to start the pump, less water consumption, and both arms can be used to fetch the water.

2D LAYOUT OF THE HAND PUMP SYSTEM USING QUICK RETURN MECHANISM:





WORKING PRINCIPLE:

The experimental setup consists of hand pump whose activation lever is attached to the guide way of the quick return mechanism, and this guide way is coupled to a plate which consists of knob which is rigidly fixed into the slot of the guide for transmitting the rotation motion into a sliding one. And this sliding is transmitted to the lever of a pump so the lever creates suction inside the chamber so the water is pumped from ground to the desired locations.

ADVANTAGES:

- By using this mechanism, we can easily lift the water.
- By using these we can save the electric power.
- It is portable.
- Less maintenance and cost efficient.

APPLICATIONS:

- It is used in rural areas.
- As the installation cost of hand water pump with hand lever is low it is useful for poor people.
- It can be installed in all the public places.