

Fabrication of See Saw Operated Pump

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Abstract- We know that, our country has based on agriculture. About 70% people live in villages and that people are below poverty level. India is second largest nation in the continent of Asia. India is the biggest democracy in the world.

The main occupation of people in India is farming. In India different crops are grown in different season. But the water supply for agriculture is not adequate because of irregular and insufficient rainfall. As in Vidarbha region there is a problem of electricity.

Index Terms- HVLP, LVLP, Electrostatic spray painting.

I. INTRODUCTION

Many attempt had been performed by different people from different region to overcome this problem by developing hand operated pump, foot operated pump, etc.

Studying and analyzing different model our group decided to develop pump which can run by the utilization of see saw. Here we try to represent a 'CONCEPT MODEL OF SEE SAW OPERATED WATER PUMP'. Many people child enjoy the see saw. The manual power i.e. operating the see saw by the child is transferred to the reciprocating movement of piston of pump. In this model we provide the piston pump mounted on one side of the see saw arm.

The pump we here use is a "reciprocating piston pump" as this is an concept model to show that further developing pump according to model we can able to develop such a useful water lifting device and so the people who are not afford the electricity are able to utilize this product. The cost of this is more ever not exceed beyond five thousand rupees.

Earlier pumps which are run on the electricity, that are not used in places where electricity is not available. Also they have high cost and high maintenance cost. Operating cost of such pumps is also high. two mass- two spring system. The gravity assisted free energy pump is operate manually and should have low initial and operating cost.

I. I NEED OF SEE SAW OPERATED PUMP

The conventional centrifugal pump needs either electricity or diesel engine, but the present innovation works on pedalling. This is a non-polluting and environment friendly device. Since it is made of commonly available materials and costs Rs.3000 it is affordable to common people. It requires less maintenance and minimum input energy is required to get the maximum output of water. This device can be transported easily from one place to another.

JOY PUMP (SEE SAW PUMP)

Joy pump is an innovative concept of pumping water from a bore well, a sump or a rain water collector tank. It uses playful energy of the children or the operators collectively to pump water. The Joy pump can draw water from a well and further lift it to an overhead tank above the ground level for storage and distribution. It does not require electric power. It is an eco-friendly, child friendly pump.



II. CONCEPT

1. Simple Machines are the most basic machines that used to decrease the amount of force or the direction of force. Simple machines are machines that have few or no moving parts and are meant to make our life easier. For example, the pulley used to lift water from a well, a see-saw etc.
2. Simple Machines make our life simpler by decreasing the amount of force or the direction

of the force applied. They thus provide a mechanical advantage.

3. A task may require the application of a large force for a short distance. The force multiplied by the distance moved by the load is the work.
4. The work required to accomplish a task remains the same, irrespective of how we do it.
5. A simple machine reduces the force required to accomplish the work.
6. But, it increases the distance it has to be applied for.
7. So, the work remains the same, but it is easier to do it. For example, lifting a heavy object directly would require much more force than pushing it over a slope. In pushing it over the slope, the load moves a larger distance.
8. Simple machines can also be used to change the direction of force applied. Like, in a see-saw when one person goes down, the person on the other arm is pushed up. So, the direction of force is changed from downwards to upwards. It would have been much more difficult to pull the person upward directly.

Pump

A pump is a device used to move fluids, such as gases, liquids or slurries. A pump displaces a volume by physical or mechanical action. One common misconception about pumps is the thought that they create pressure. Pumps alone do not create pressure they only displace fluid causing a flow. Adding resistance to flow causes pressure.

The earliest type of pump was the Archimedes screw, first used by Sennacherib, King of Assyria, for the water systems at the Hanging Gardens of Babylon and Nineveh in the 7th century BC, and later described in more detail by Archimedes in the 3rd century. In the 13th century AD, al-Jazari described and illustrated different types of pumps, including a reciprocating pump, double-action pump, suction pump, and piston pump.

In Indian mythology, Lord Krishna playfully splashed colors on Gopees using a "Pichkaaree", which was, and is even now, a reciprocating hand pump. Hence historically "Pichkaaree" should be recognized as the first pump, ever devised

Positive displacement pumps



A lobe pump
Hand-operated, reciprocating, positive displacement, water pump in Košice-Ľahanovce, Slovakia (walking beam pump).



Mechanism of a scroll pump

A positive displacement pump causes a fluid to move by trapping a fixed amount of it then forcing (displacing) that trapped volume into the discharge pipe. A positive displacement pump can be further classified as either

a rotary-type, for example, the lobe, external gear, internal gear, screw, shuttle block, flexible vane or sliding vane pumps, the helical twisted Roots pump, the liquid ring vacuum pump.

1 Roots-type pumps

The low pulsation rate and gentle performance of this Roots-type positive displacement pump is achieved due to a combination of its two 90° helical twisted rotors, and a triangular shaped sealing line configuration, both at the point of suction and at the point of discharge. This design produces a continuous and non-vorticeless flow with equal volume. High capacity industrial "air compressors" have been designed to employ this principle as well as most "superchargers" used on internal combustion engines.

2 Reciprocating-type pumps



Reciprocating-type pumps use a piston and cylinder arrangement with suction and discharge valves integrated into the pump. Pumps in this category range from having "simplex" one cylinder, to in some cases "quad" four cylinders or more. Most reciprocating-type pumps are "duplex" (two) or "triplex" (three) cylinder. Furthermore, they are either "single acting" independent suction and discharge strokes or "double acting" suction and discharge in both directions.

III. ADVANTAGE

1. Less investments
2. In runs on manual power so saves electric energy.
3. Easy to operate.
4. Maintenance cost is low.
5. Anyone can operate it easily.
6. It can be used also for exercise purpose

IV. APPLICATION

1. In school, in public place garden.
2. The most widely useful application of this model is to transfer the water from one reservoir to another without use of electrical energy.
3. This model is useful in the areas or regions where electricity
3. Availability is in fewer amounts.
4. This will help the minority people such as "Advises" which are dependant on small firms and they don't be able to get electricity or to afford it. This will help them to a great extent.
5. As the model is manual it will also be useful in domestic applications such as pursuing water to the lawn, to the plants also for transferring water from one tank to other.

6. It will also be useful for exercise as many people have habit to exercise in the morning as well as delivering water to the plant will be performed.

V. OBJECTIVE

1. To make use of manual effort for water lifting in garden.
2. To prepare an efficient and cost effective system

VI. CONCLUSION

After carrying out testing of our project we got positive output. We obtain most of the objectives and goals that we set for ourselves at the start of our project. We have been able to reduce the man power. No requirement of electricity and their by reducing overall cost during implementation. Anyone can operate this pump and lifted about 400ml water in ONE CYCLE.

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