SWING OPERATED WATER SUPPLY SYSTEM

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I. ABSTRACT

This project research describes approximately lifting the water for irrigation motive, household use in villages, and so forth. In day to day life there's a far extra use of swing by way of kids, within the swing energy is created via swing action that strength may be used for lifting the water in village area in addition to in gardens. To raise the water, system used is reciprocating pump. The use of swing reduces the fee of centrifugal pump installation. This work proposes the implementation of water lifting in swing mechanism. When the seating frame of the swing begins to transport ahead & backward in oscillating movement it has a tendency to move the rod. This connecting rod is connected between swing and pump with which this rod transmit the oscillatory movement into reciprocating motion because of which lifting water is accomplished. The shaft is attached to connecting rod and this connecting rod is similarly linked with reciprocating pump through which water is pumped. This project directly connected with eco-friendly, pollutants free, the protection fee is much less and requires less human efforts.

<u>KEY WORDS</u>: Hand pump, bearing and swing, swing frame, reciprocating motion, connecting rod, shaft and rotary motion.

II. INTRODUCTION

Energy is the capability to do work. It is a using force of modern societies and era and utilization of power are essential for the socio financial improvement. Per capita intake of strength degrees are frequently considered a great degree of economic development. Human effort energy conversion is without difficulty done from children's play under situations where the kids are static relative to the transferring playground mechanism, which include seesaw, swing, and merry-pass-spherical. Where the youngsters are in a dynamic kingdom relative to a static mechanism (e.g., swing) it'll be difficult to employ value-effective human power conversion techniques due to considerations of protection and simplicity. A form of mechanisms are used for conversion of human power to usable mechanical energy like springs, hydraulic additives and so on. Improving the performance of the conversion machine is regularly important inside the case of person human power conversion – generally might result in increased price of the overall gadget. In the case of numerous kids gambling on playground system, power is produced as a spinoff. Therefore, a low-value machine can be designed and implemented without severely affecting performance, considering the fact that a big number of youngsters are involved inside the play.

In simple explanation we can conclude or say that our project may provide a result with the use of some components like hand pump, swing, bearings, etc. we are going to attached the hand shaft of hand pump with the swing circular rod with the help of connecting rod and crank which will convert the oscillatory motion of swing to the reciprocating motion of hand pump. Due to which when the swing start doing its work it will convey its effort to hand pump due to which the hand pump start to supply water and as per the condition water does not require but children playing on swing at that time the other pipe line connected with high storage tank as per this connection when requirement of water is not their it will direct supplies to tank and it will conserve for future aspect and whenever water require and no one there for operating swing at that time needy can directly get water by turning tap on which is connected to tank.

III. Literature review

A pump is a device that moves fluid, or sometimes slurry, by mechanical action. Pumps can be classified into three major groups according to the different type of method it use to move the fluid and namely they are *direct lift*, *displacement*, and *gravity* pumps.

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Pumps can be operated by some mechanism (typically reciprocating or rotary), and consume energy to perform mechanical work by moving the fluid. Pumps can be operate through many energy sources, which include manual operation, electricity, engines, or wind power and comes in many sizes, from microscopic for use in medical applications to large industrial pumps.

Mechanical pumps will serve in a wide range of applications such as pumping water from wells, filtering of aquarium, pond filtration and aeration, in the car industry for water cooling and injection of fuel, in the energy industry for pumping oil and natural gas or for operating cooling towers. In the medical industry, pumps are used for biochemical processes in developing and manufacturing medicines, and as well as artificial replacements for body parts, in particular the artificial heart and penile prosthesis, which can be used in surgeries like heart.

In biology, many different types of chemical and bio-mechanical pumps have evolved, and biomimicry is sometimes used in developing new types of mechanical pumps.

Atul found that water is pumped by the pedal operated. Pedaling is the efficient way of utilizing power from human muscles. To lift the water continuously pedaling it is very much pain giver to the human muscles that also a human cannot pedal for an hour.

Kali charan found that using the pendulum, water is going to be pumping through oscillating motion. But this oscillatory motion is not continuous motion a person should lift and drop or either by keeping magnet for lifting and drop it requires human efforts.

IV. Problem statement

Every time using the human effort with hand pump is takin the half energy of the human and if we see it is waste of human energy. So, it is required to prepare or finding good and cost free solution.

V. Working & Construction:

In our model as shown in figure we are going to use swing and the hand pump as the main and this two important part of our working model connect with each other with the help of crank and connecting rod.as shown in figure the swing is connected with main frame in that the main rod or shaft of the swing is having bearing on both side near to the both bracket of the swing. This bearing will provide free revolution of shaft and decrease the wear and tear. when the swing start to oscillate at that time the shaft start to revolve due to which the crank and connecting rod connect with it is also get some motion as the connecting rod intake movement it convey the oscillating motion in reciprocating motion of hand pump due to which the hand pump start its works and as per the require output the water start to supply. As per the above information and below shown figure the working and construction take place.

The merit of advanced version are it can be set up at locations consisting of colleges, playgrounds, resort, villages and gardens in which mass transit of kids is sighted. Easy installation and preservation. It does not require any working value as it is operating manually. It may be installed in any place quick. It is transportable. Manufacturing is easy. It required small region for set up.



VI. Parts name

| SR.NO | MATERIAL | QUANTITY | DECISION |
|-------|--------------------|----------|----------|
| 1 | FRAME | - | Make |
| 2 | SWING | 1 | Make |
| 3 | LINK | 2 | Make |
| 4 | RECIPROCATING PUMP | 1 | Buy |
| 5 | WATER TANK | 2 | Buy |
| 6 | BEARING | 2 | Buy |
| 7 | SWING SHAFT | 1 | Buy |
| 8 | CONNECTING ROD | 1 | Make |
| 9 | NUTS & BOLTS | - | Buy |
| 10 | SEAT | 1 | Make |

VII. Calculation

1. Bearing :-



Bearing

Bearing no :- e2 × AP 205

Material :- MS Steel.

2. Nut and bolt



Nut and bolt

Size: M12

3. SHAFT



SHAFT

SHAFT LENGTH :- 176 CM

SHAFT DIAMETER:- 4 CM

4.HAND PUMP



FIG NO 7.4 HAND PUMP

HIGHT OF HEND PUMP:- 52 CM

CYLINDER DIAMETER:- 10 CM

VIII. CONCLUSION

In upcoming days the call for off power resources will be growing each day's the aim of this research or project is to expand the arena by means of enriching by way of making use of its resources greater. Now time has come for using such progressive ideas and it have to be added into exercise. In this project research the mechanism is used to raise the water from lower area to higher with reciprocating pump. This venture is absolutely based totally on "simple pendulum". There are many assets to convert from mechanical strength to numerous paperwork. In this system no fuel or electricity is used. This mission gives the overview for the demanding situations and possibilities for strength lasting in coming a long time, this work can make first-class use of present generation to make certain reliability and performance under changing situation. It outlines the want for cost effective era in rural place.

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