

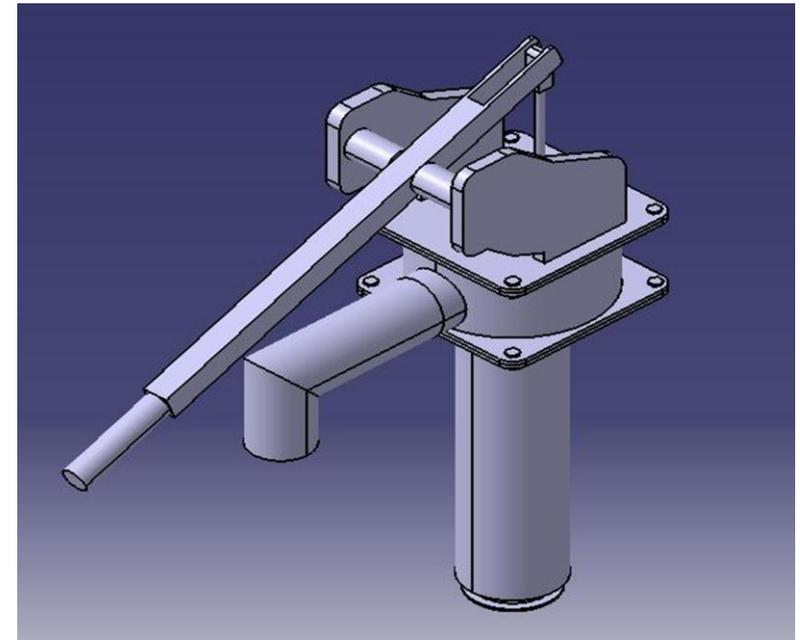
DESIGN/FABRICATION PROJECT



PDPM
INDIAN INSTITUTE OF INFORMATION TECHNOLOGY
DESIGN & MANUFACTURING
JABALPUR

PRAVAAH

A Continuous Supply Hand-pump



Aren't you tired of the frequent power failures and the resulting water problems?

Here we propose a hand-pump design which not only provides a continuous supply of water and a saving in your utility bills but also provides water during both the phases of pumping.

Designed by:

Akshay Gautam

Final Year Mechanical Undergraduate

itzakshay@in.com



Specifications:

- Diameter of Riser Pipe - 58 mm
- Diameter Outer Casing - 84 mm
- Cylinder Stroke length - 80 + 4mm
- Plunger length - 150 mm
- Total weight - 32kg.
- Tank capacity – 950 ml

Estimated Cost - Rs. 2500

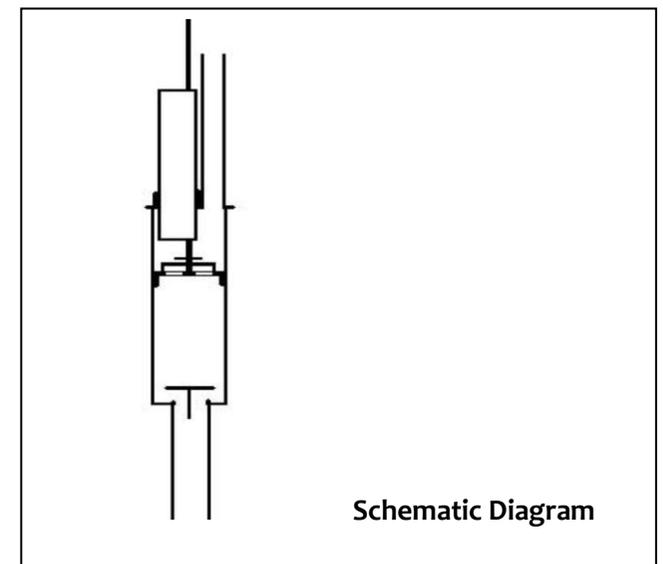
Working principle:

The working principle of this hand-pump is similar to that of the prevalent hand-pumps for one phase of pumping while for the other phase of obtaining water principle of buoyancy is used.

ENVIRONMENT AND ERGONOMICS

PRAVAAH is an eco-friendly product which involves sustainable and green architecture causing no harm to the environment in any manner. It solves the problem of obtaining continuous flow of water taking into consideration user amiability.

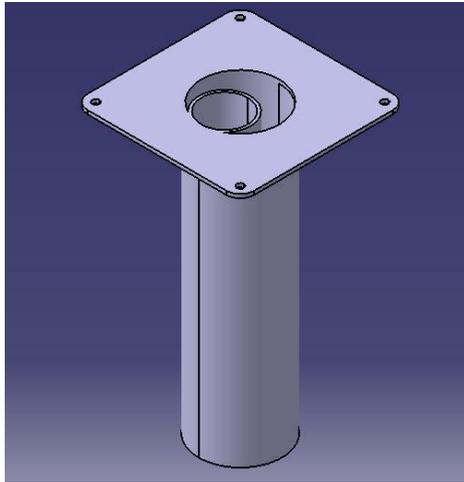
- It is a differential double-acting pump; the pump rod is of a large diameter where it enters the upper chamber and if it is sized so that its cross-sectional area is exactly half -he cross sectional area of the chamber, it will therefore displace half the volume of the chamber on the down-stroke, but on the up stroke, the other half of the volume will be discharged by the upward movement of the piston, as for conventional bucket pumps.
- Pump head with fulcrum Output (water rate) - 125 mm stroke length of the handle provides a water discharge of 1100 litres per hour if operated at the rate of 30 strokes per minute Working depth - 45 meters.



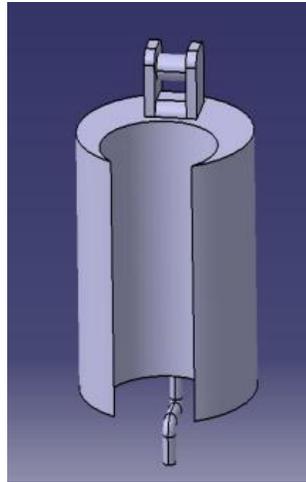
FEATURES

- Gives water in both the upward and the downward stroke of the piston. Double Cylinder pump so both downward and upward stroke delivers water hence optimum utilization of human energy spent is achieved.
- Fully fabricated steel structure duly hot dip galvanized.
- Non-corrosive underground components capable of handling corrosive water situation there by giving longer life.
- Robust and reliable under field conditions, cost effective, and maintainable by users at village level.

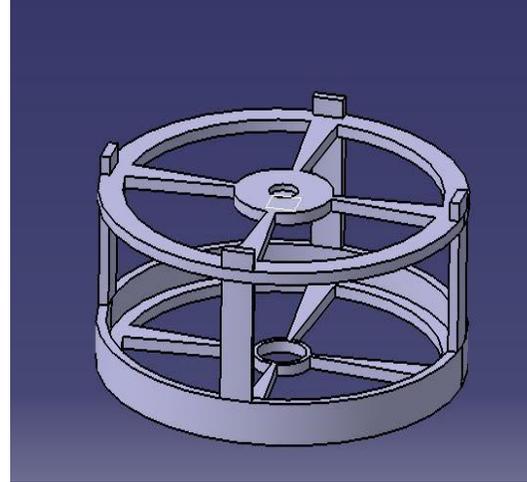
Parts:



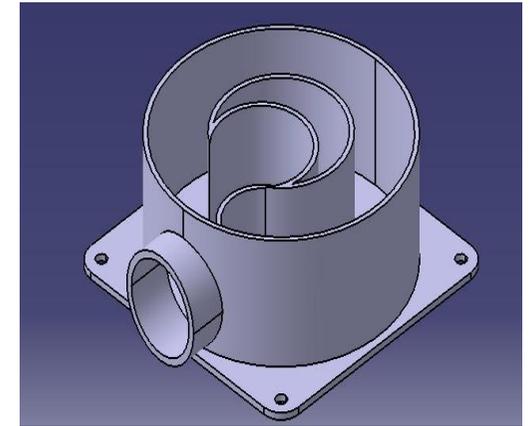
Outer Casing



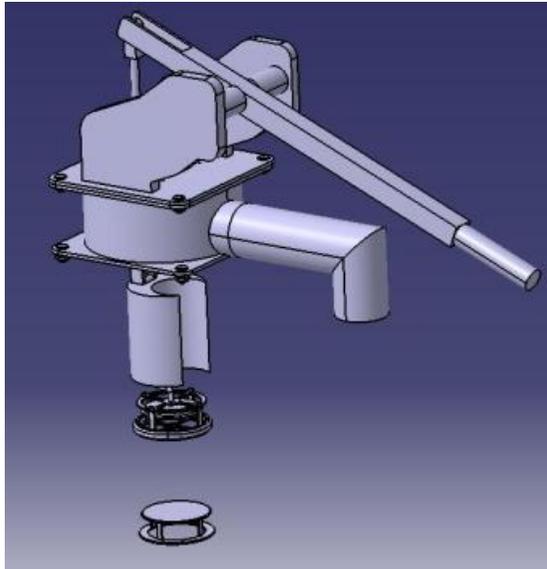
Piston



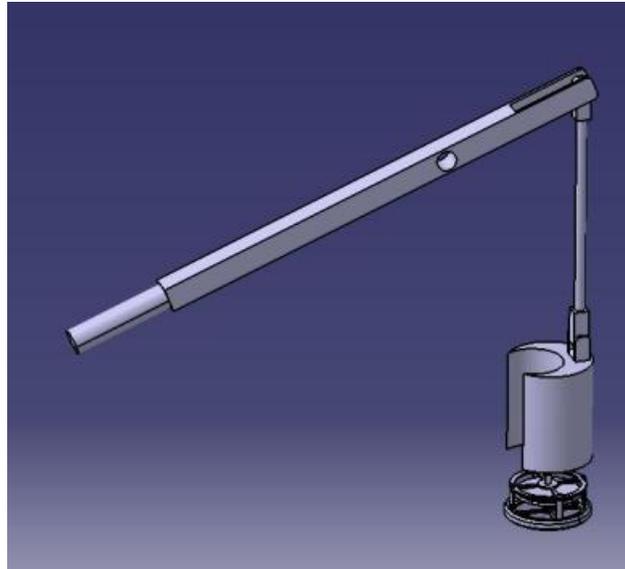
Plunger



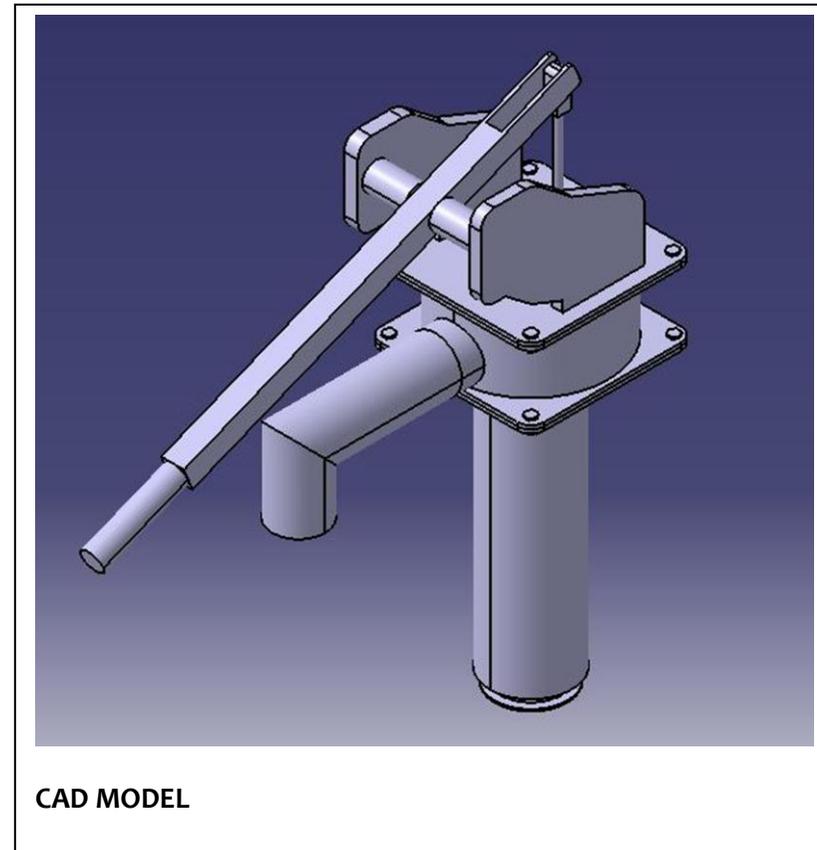
Tank



Inside Outer Casing



Handle Assembly



CAD MODEL