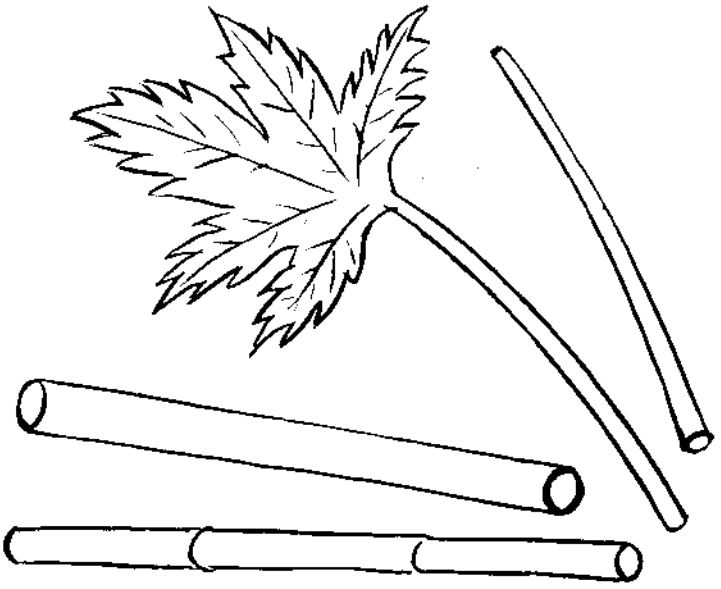
Inertia Pump

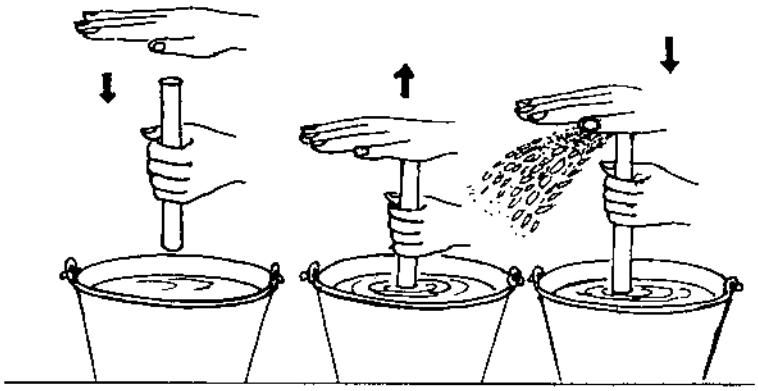
This is a simple and perhaps, a most amazing pump. Any hollow tube - PVC pipe, papaya stem, or a short length of bamboo, can be made to pump up water !

1. Can you convert a bamboo tube into a pump ? Any hollow tube - a PVC or a metal pipe, a short length of bamboo, or even a 30 cm long papaya stem can be made to pump up water.

If you take a short length of bamboo, then using a poker make a hole in the nodes, so that the bamboo becomes a connected hollow tube.

In villages, it is often easier to find a hollow plant stem - like that of the papaya. The nice thing about the papaya stem is that all the children can then have fun with their pumps and own them too.





2. Take a 40 -50 cm PVC pipe, the kind which is used for household electrical wiring. Rub its ends on a sandpaper to make them smooth. Hold the pipe with your left hand and move it up and down into a bucket of water. Keep the palm of your right hand on the top of the pipe and open and close it with each up and down reciprocation like a hinge. Soon water will start squirting out . In this case the up - down motion of the left hand does the pumping while the right palm acts like a valve. The use of the hand palm gives a very good physical feel for a valve.

3. How does this pump work ? When the pipe is plunged in the water, because of the inertia of the water, a bit of the water rises in the pipe. Air is expelled as the palm is lifted and the top of the pipe is open. Now the palm closes the top. The water which has risen cannot go down. With every stroke, water rises in the pipe a little, and ultimately it squirts out.

Try and find the maximum height to which you can lift water by this means. Modifications of this simple Inertia Pump are still used in parts of Andhra Pradesh for lifting water.