

# Pumps

## Other Pumps & Parts

Beginning with the simplest, I've pulled water up from about twelve or fifteen feet using no more than a piece of plastic pipe and my bare hands.

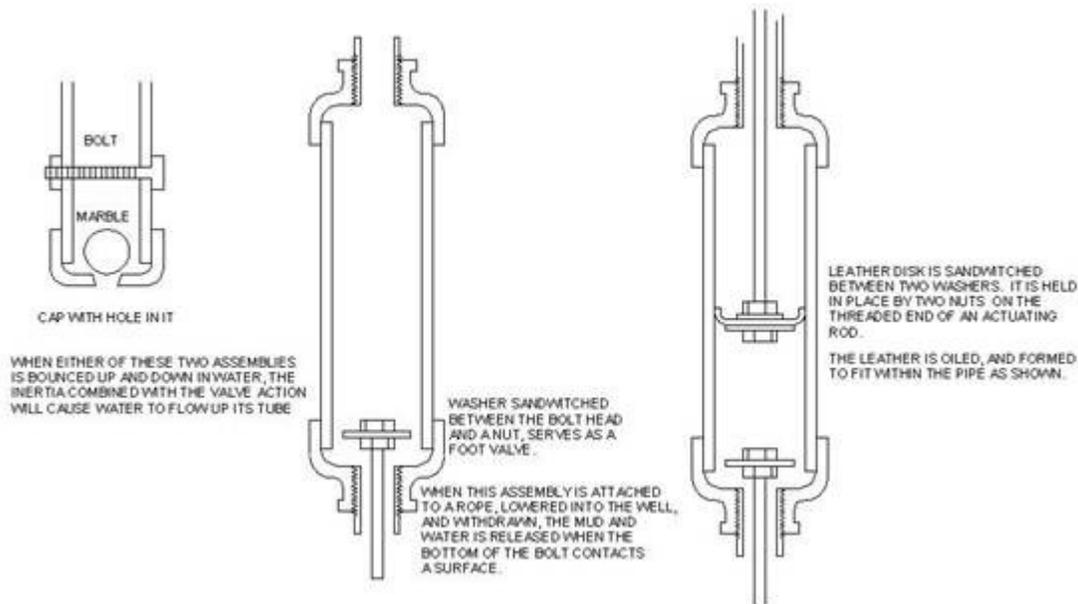
Lower the pipe into the water until the top is a couple feet off the ground, and the other end is at least three feet under water. Place your hand over the end. Yank the pipe upward, and then suddenly force it downward while releasing your hand enough to allow a gush of air to escape. Replace your hand firmly just as you get to the bottom of the downward thrust.

You repeat this a few times, and water will begin to blast out from under your hand instead of air. This pump is good for two things:

1. Illustrating a principle that could be harnessed for something worthwhile
2. Giving yourself and some friends a muddy shower.

## A Simple Check Valve

Drill about a 3/8" hole through a cap for 3/4" plastic pipe, and counter-sink it from the inside. Glue it onto the end of a piece of pipe. Drop a marble down the pipe, and put a small bolt through the pipe about a half-inch above the marble.



## More Useful Pumps

By jerking this assembly up and down, water will be drawn up the pipe. This time you are not relying on vacuum to do the lifting, so you can draw water up from much greater depths.

A more substantial valve could be made from pipe fittings as shown in the middle illustration. As weight accumulates, perhaps it could be mounted with a spring to more easily manage the action.

If your well is shallow enough for you to draw water up by suction you can mount a hand pump at the top.

I have made a couple of positive action pumps based upon the leather piston shown in the illustration at the right. The rod was connected to the end of a lever, that extended to form a handle on the other side of a fulcrum. They weren't pretty, but they did the job. The check valve at the bottom in those cases was a firm plastic ball with a bolt extending through it to keep it aligned with the hole. The yield of the "super ball" made a good seal with the seat.

I have also used a 12 volt “bilge pump” to lift water a few feet out of a very shallow well. This is a very common pump of positive displacement design commonly found in RV stores. It is positive displacement, and would be good for pumping water up into elevated storage tanks. Be very careful not to run it for even a few seconds when it is dry though.