

## **Provide Safe Drinking Water**

Collect/Generate Energy

Thermal Energy

Geothermal Energy

Heat Exchanger

Heat Pump

Solar Energy

Photovoltaic Cells

Evacuated Tube

Flat Panel

Work Energy

Round-A-Bout/Merry Go round

Treadmill

Hand Crank

Bicycle

Game/Competition

Punching Bag

Punching Game

Piston-Cylinder

Spring

Game/Competition

Rowing Machine

Scooter/Carrier Generator

Swing

Skip-it

Jump rope

see saw

treadle

swing

donkey pusher (revolving spoke)

spring floor

elliptical

rowing machine

recumbent bike

magnetic perpetual motion

weighted wheel

Price of Right wheel

Pendulum

Hamster Wheel

Skip it

- plays music
- Hydraulic Energy
  - Pump
  - Piston-Cylinder
- Hydro Energy
  - Turbine
  - Water Mill
  - Propeller
- Wind Energy
  - Turbine
  - Propeller
- Nuclear Energy
  - Fusion
  - Fission
  - Cold-Fusion
- Steam Energy
  - Burn Coal
  - Natural Gas
  - Wood

#### Store Energy

- Heat Energy
  - Heat Sink
  - Liquid
  - Solid
- Electrical Energy
  - Large Capacitor
    - Materials
      - Teflon
      - Ceramic
  - Inductors
  - Battery
    - Voltage
      - Deep Cycle
      - Varying Chemicals
        - Alkaline
        - Lithium Ion
        - Nickel Cadmium
        - Nickel-Metal Hydride
- Mechanical Energy
  - Spring

- Spring Rate
- Life Cycle
- Material
- Type of spring
  - Helical Spring
  - Torsional Spring
  - Leaf Spring
- Potential from Gravity
  - Pulley system
  - Slide
- Flywheel

- Transform Energy
  - Mechanical Energy
    - Generator
    - Clutch
    - Gears
    - Motor
  - Electrical Energy
    - Voltage Regulator
    - AC Ballast
    - Inverter
    - DC Ballast
    - Rectifier
    - Transformer
    - Thermal diodes

- Energy Distribution
  - Electrical Energy
    - Induction
    - Transistors
    - Wires
    - Control signals
      - Infrared signal
      - Radio waves
      - Photodiodes
  - Mechanical Energy
    - Driveshaft
    - Pulleys
    - Belt
    - Chain

- Gears
- Motor
- Spring system
- Rube Goldberg System
- Hydro
- Routing system
  - Hoses
  - Manifolds

#### Collect Water

- Manual Pour
- Piped water from community source (comes pressurized)
- Gravity Fed
- Pump
  - Electric pump
  - Manual hand pump
  - Gasoline pump
- Routing System
  - Tubing
    - Copper Piping
    - Plastic Tubing
    - Open Channel
    - Aqueducts

#### Filter Water

- Crumb Rubber Filter
- Sand Water Filter
- Ceramic Filter
- Centrifuge
- Membrane
  - Reverse Osmosis
  - Ultrafiltration
- Cloth filter
  - Muslin Cloth
- Settling
- Charcoal Filter
- Brita (purchased)
- Distillation/Evaporation

#### Disinfect Water

- Chemical

- Ion Exchange
- Chlorine
- Silver nitrate
- Iodine
- Ozone
- Heating Water
- Microwaves
- Distillation
- Boil
- Pasteurizing
- Ultra-Violet
  - Pressurized System
    - Standard UV Chamber
      - Teflon Sleeve
      - Quartz Sleeve
    - Free Flowing System
    - Suspended UV bulb

#### Transport Water through System

- Control Flow Rate
  - Nozzle
  - Valves
    - Ball Valve
    - Gate Valve
    - Butterfly Valve
    - Globe Valve
- User Input
  - LED Interface
  - Electrical Button
- Head Loss
  - Pump
  - Gravity fed

#### Store Water

- Water Cooler
- Water Truck
- Well
- Bottles
- Water Tower
- Water Barrel
- Water Bucket

- Water Tank
- Cooling Bucket
- Canteens
- Reservoir
- Bags

#### Maintain Functioning System

- Maintenance Indication
  - LED Indicator
  - Email Notification
  - Cell Phone Notification
  - Audio Alarm
  - Scheduled Maintenance (outside source)
  - Calendar
  - No Water Flow

#### User Education

- Manual
- Training
- Text message

#### Ease of Maintainability

- Inlet and Outlet to system easily accessible
- Front open panel
- Ease of access to internal components
- Quick disconnect features
- Easy troubleshooting guide

#### Resist Environmental Damage

- Sealed UV resistance Plastic Enclosure
- Insect Treated Wood Enclosure
- Metal Enclosure
  - Aluminum
  - Stainless Steel
- Canvas over Aluminum Frame

#### Operator Incentive to continue treating water

- Cell phone charging station business
- Only operates when water is treated
- Provide LED lighting for home
- Provide power for home
- Guaranteed spot in heaven
- Threat of voodoo curse
- Become stronger through manual power generation
- Title of a being community leader

Profitable business if applicable