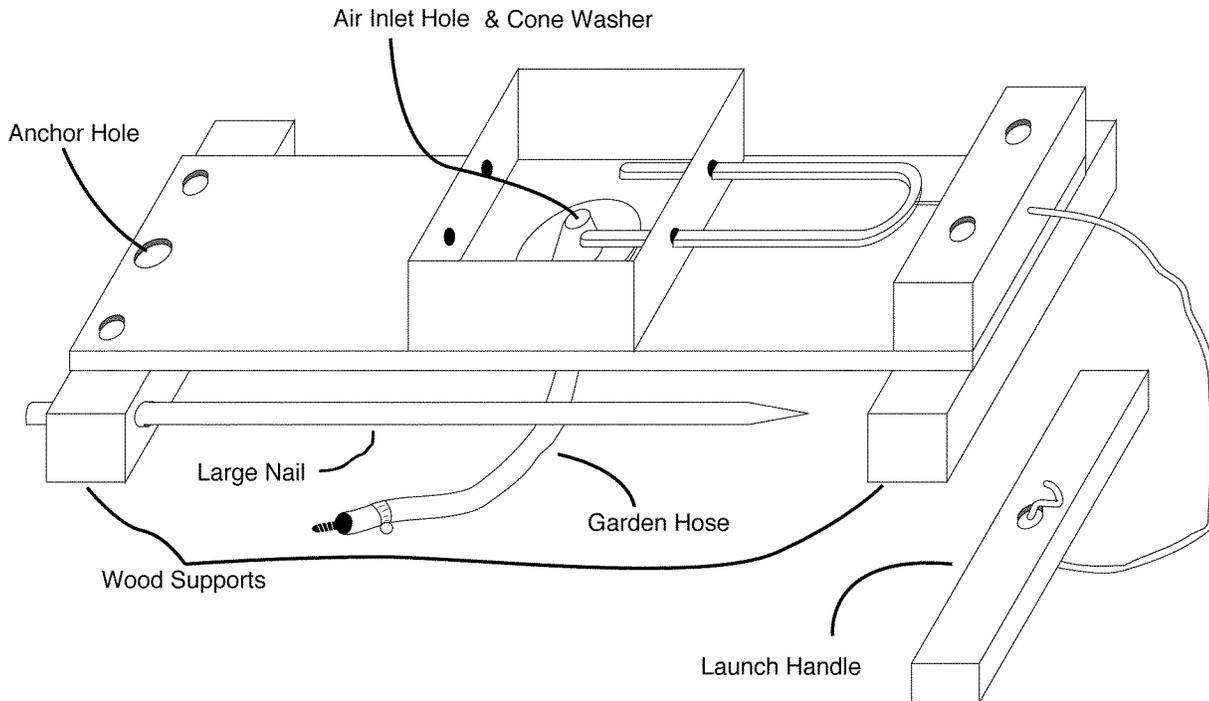


## Building the basic launch pad



### Materials:

-**Formica double-sink countertop cutout.** This can be easily and cheaply obtained from a local company that manufactures and/or installs countertops. Usually this is a throw-away item that is headed to the dumpster. One cutout will make eight 1x4x16 inch base plates for the basic launch pad.

-**1 foot of 3/16" steel Rod** This is used to secure the rocket to the electric box prior to launch and usually comes in three foot rod.

-**1 GM or Ford tire valve stem.** Used on the end of the hose to pressurize the system.

-**1 Large diameter (Ford) valve stem.** Two be used for the alternative launch pad design.

-**1 Four inch square metal electrical box** Use the design that has two holes on each side of the box.

-**2 3x1/4 inch bolts with nuts and washers** to fasten the stop block to the pad.

-**2 2x2x6 inch wooden blocks** to be used for the legs to elevate the pad off of the ground.

-**1 2x3x4 inch wooden block** that stops the U shaped rocket clamp from flying off the launch pad when the rope is pulled.

-**2 One inch wood screws** to fasten the electrical box to the Formica table top.

- 2 **5/8 inch Large metal washers**. These may not be necessary if the pad has a good seal.
- 1 **Ten foot length of nylon chord** 1/4 inch diameter to be used to launch the rocket.
- 1 **1x1x6 inch piece of wood** for the handle.
- 1 **10 inch x 1/2 inch diameter nail** to secure the pad to the ground during launch.
- 1 **5/8 inch inside diameter 4 foot section of garden hose**.
- 1 **1/2 inch diameter PVC 90° elbow** attached to the garden hose & pad.
- 1 **1/2 inch EMT Conduit Strap** to hold the elbow and hose to pad.
- 2 **hose clamps** to secure the garden hose to the PVC elbow and the valve stem in the opposite end.
- 1 **#10 flat 1 inch wood screws** to secure the conduit strap & PVC elbow to the pad.
- 1 **9/16 inside diameter cone slip joint washer** to provide the seal between the rocket and the PVC elbow.

## **Tools:**

Saw, flat blade screw driver, Phillips head screw driver, electric drill, 7/32" bit, 5/8" bit, hack saw, 1/4" open end wrench, 1/4 " socket and ratchet. (This list will be greatly expanded if an assembly line approach is used for mass production.)