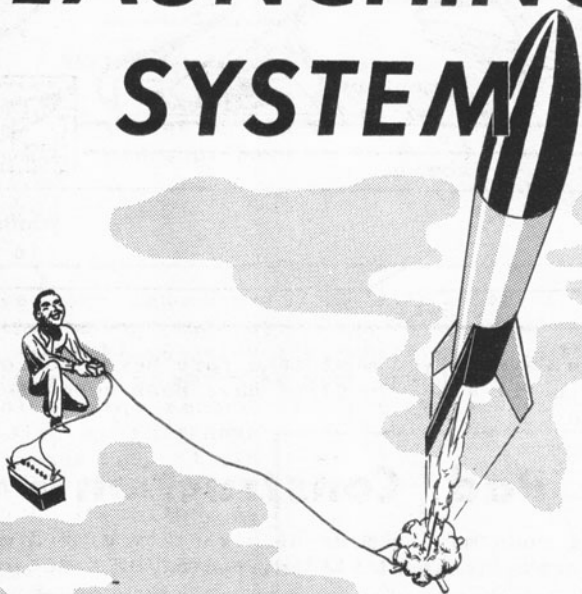


# HOW TO MAKE YOUR OWN LAUNCHING SYSTEM



**Industries, Inc.**



Devoted to Safety and Education in Rocketry

**Box 227,**

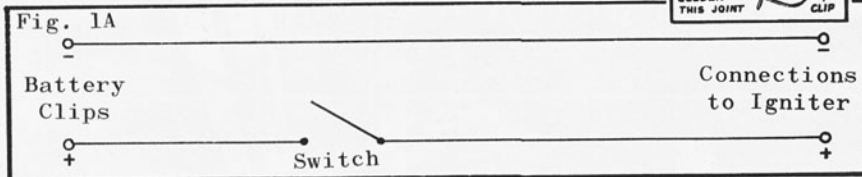
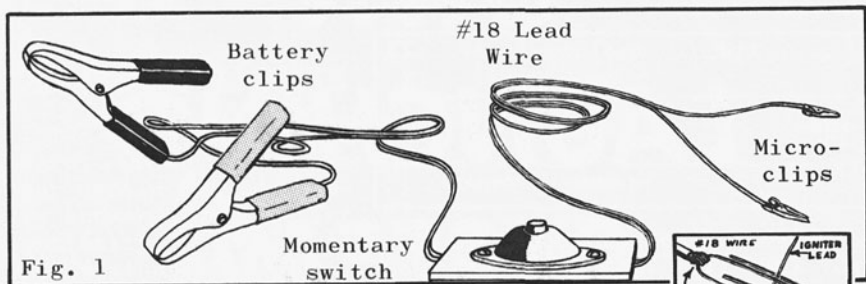
**Penrose, Colorado**

**81240**

Pages 34 and 35 of catalog #651 show some fine equipment for the model rocketeer such as the Electro-Launch, Launch Controller and Tilt-A-Pad. For you who wish to scratch-build a pad, the following ideas will get you started.

## An Easy Circuit

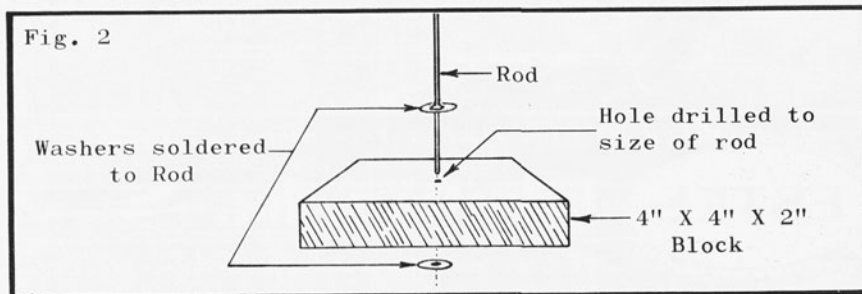
Fig. 1 shows a very simple launcher circuit consisting of battery clips to attach to a battery, (6 or 12 V. Car battery or "Hotshot" battery) a length of zip cord, a switch and a pair of micro-clips (or paper clips) for connections to the igniter leads. The inset shows the paper clip connections for wire attachment and connections to the igniter leads. Fig. 1A is the wiring schematic.



With such a system you must take care never to connect to the battery until after the clips have been connected to the igniter leads.

## Pad Construction

Launching rods may be made of a variety of rod material. 1/8" X 36" brass or steel welding rod, 1/8" X 36" piano wire

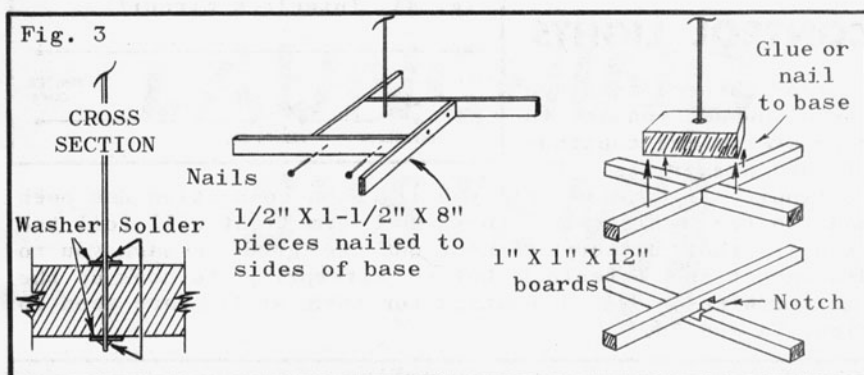


(available at your local hobby store) or a carefully straightened 1/8" coat hanger. (3/32" coat hangers are acceptable.)

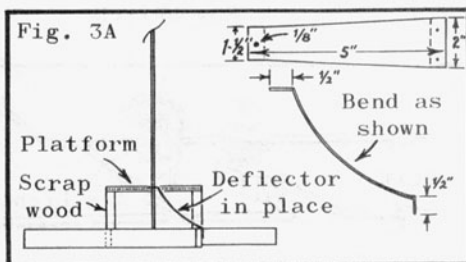
The pad may be made from a 4" X 4" X 2" block of wood. Drill a 1/8" (or 3/32") hole thru the center as shown in Fig. 2. Push the rod thru this hole 'till 1/4" sticks out on the bottom of the block. Solder a washer on the rod at this point. Slide another washer down the rod from the top side of the pad and solder it to the rod. When completed, it should look like the cross - section in Fig. 3 and hold the rod firmly to the block.

## Legs for Lateral Support

Fig. 3 shows two ways to add legs to your pad base. Either way will add firm support to your launch pad.

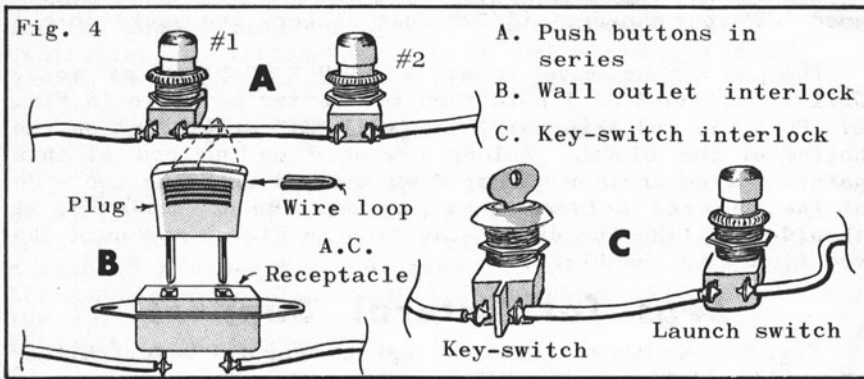


To give your launch pad long life protect it from the heat of the rocket exhaust. Page 70 of catalog #651 shows two ready-made blast deflectors which will fit the block described above. You may make your own deflector by punching a 1/8" hole in the center of a one or two pound coffee can lid and sliding this down over the launch rod. A tin strip cut as shown on the right may be installed. As the edges of this deflector are sharp, a platform as shown would add protection and fin support as well as more realism to your launch facility.



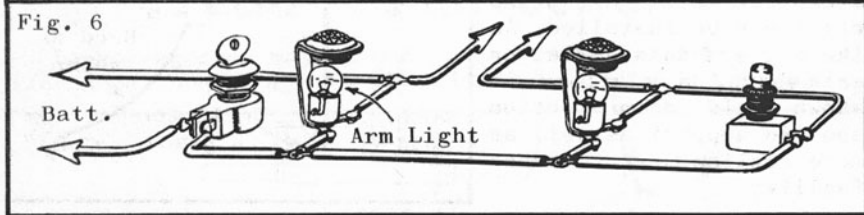
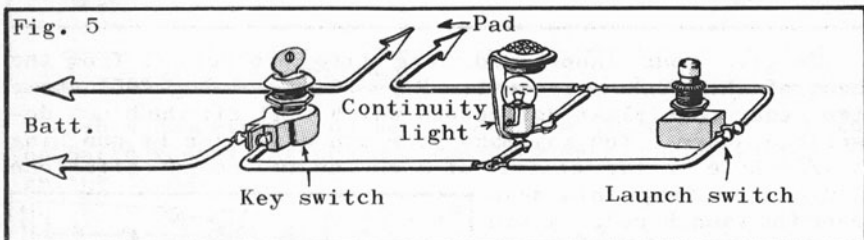
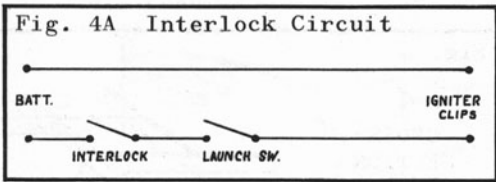
## Add Useful Controls to the System

A safety interlock is a valuable addition to your launch system and can be added in any of the three ways shown in Fig. 4. The schematic is shown in Fig. 4A.



## CONTROL LIGHTS

Two features that are useful and add realism to your system are continuity and arm lights. The continuity light will tell you if a good connection has been made to the igniters. The panel arm light will tell you visually that battery connections are good or warn you to disconnect the interlock before attempting to hook up the igniter wires. The schematics for each system are seen in Figs. 7A and 7B.



For a complete launch system in kit form the Estes Electro-Launch is recommended.

