Make a Reactor Model

NAYGN: Kits for Kids

Ingredients:

- 1 large juice can
- 2 plastic pill bottles (about 2 ½ inches tall and 1 ½-inch diameter)
- 1 plastic pill bottle top (1-inch diameter)
- 1 wire coat hanger
- 13 soda straws (12 thin, 1 thick)
- 12 to 16 kitchen matches
- 2 6-inch swab sticks
- 2 6-inch pieces of ½-inch plastic tubing
- Rubber bands
- Cotton batting
- Assorted color marking pens
- Quick-drying glue

Description:

Build this simple cross-sectional model of the pressure vessel for a pressurized water reactor. Compare the materials list to the labels on the photos, and you should be able to make the model. Note the clever rubber band "scram" spring simulating the automatic shutoff system of a real reactor.

Completed model:

1 Control rods partially withdrawn

2 Rubber band scram spring

3 Pressure vessel

4 Cool water in

5 Hot water out

6 Rubber bands to hold vessel in place

7 Shielding

Reactor Controls:

8 Fuel elements (matches colored red)

9 Core lattice (1-inch thin straws)

10 Channel for central control mechanism (thick straw cut to 3 inches)

11 Central control mechanism shaft (coat hanger wire)

12 Hook for rubber band scram spring

13 Rubber band

14 Control rods (swab sticks)

15 Soft plastic cap (1-inch diameter)

Figures 1 and 2 on next two pages.

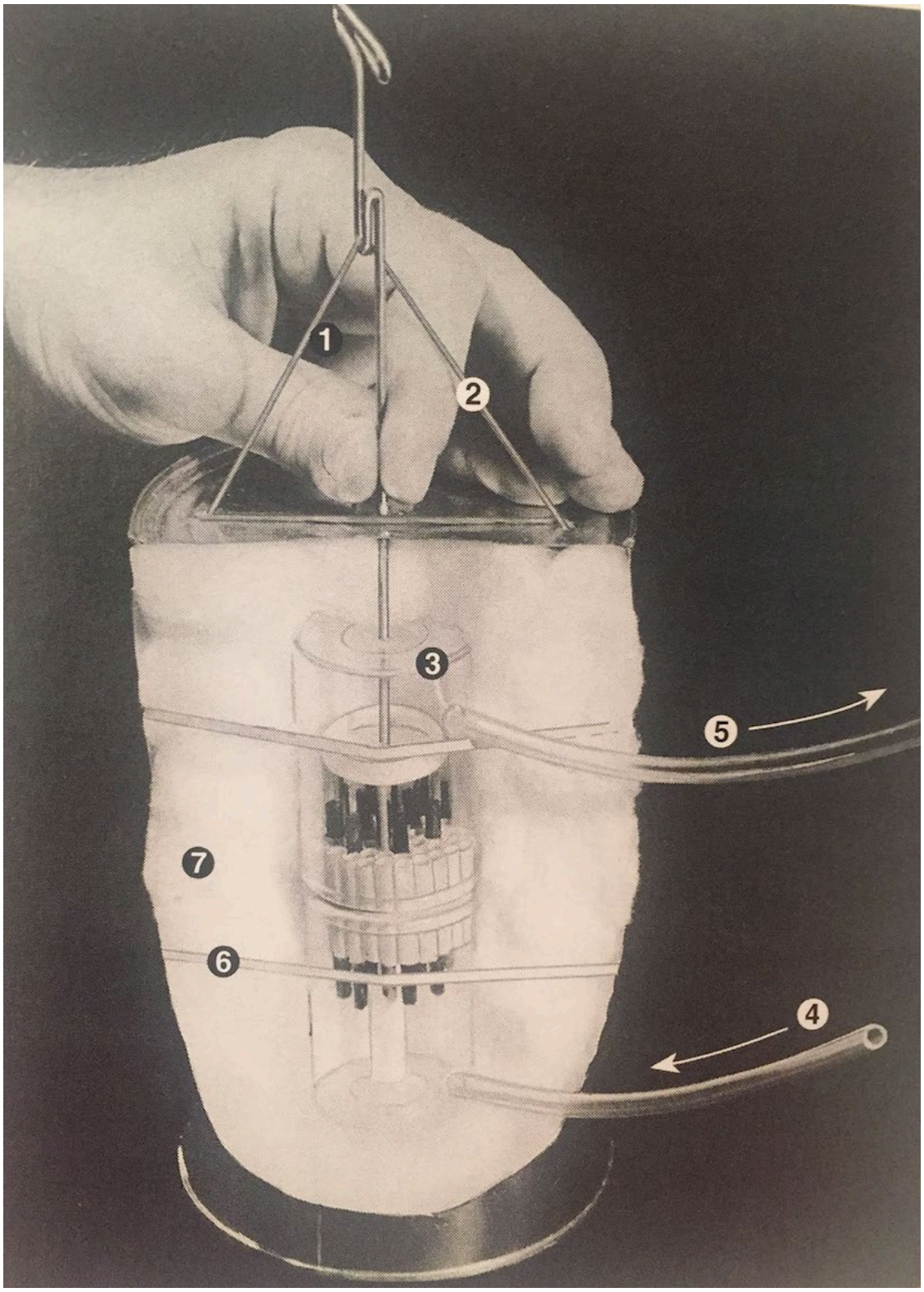

Figure 1: Completed Model

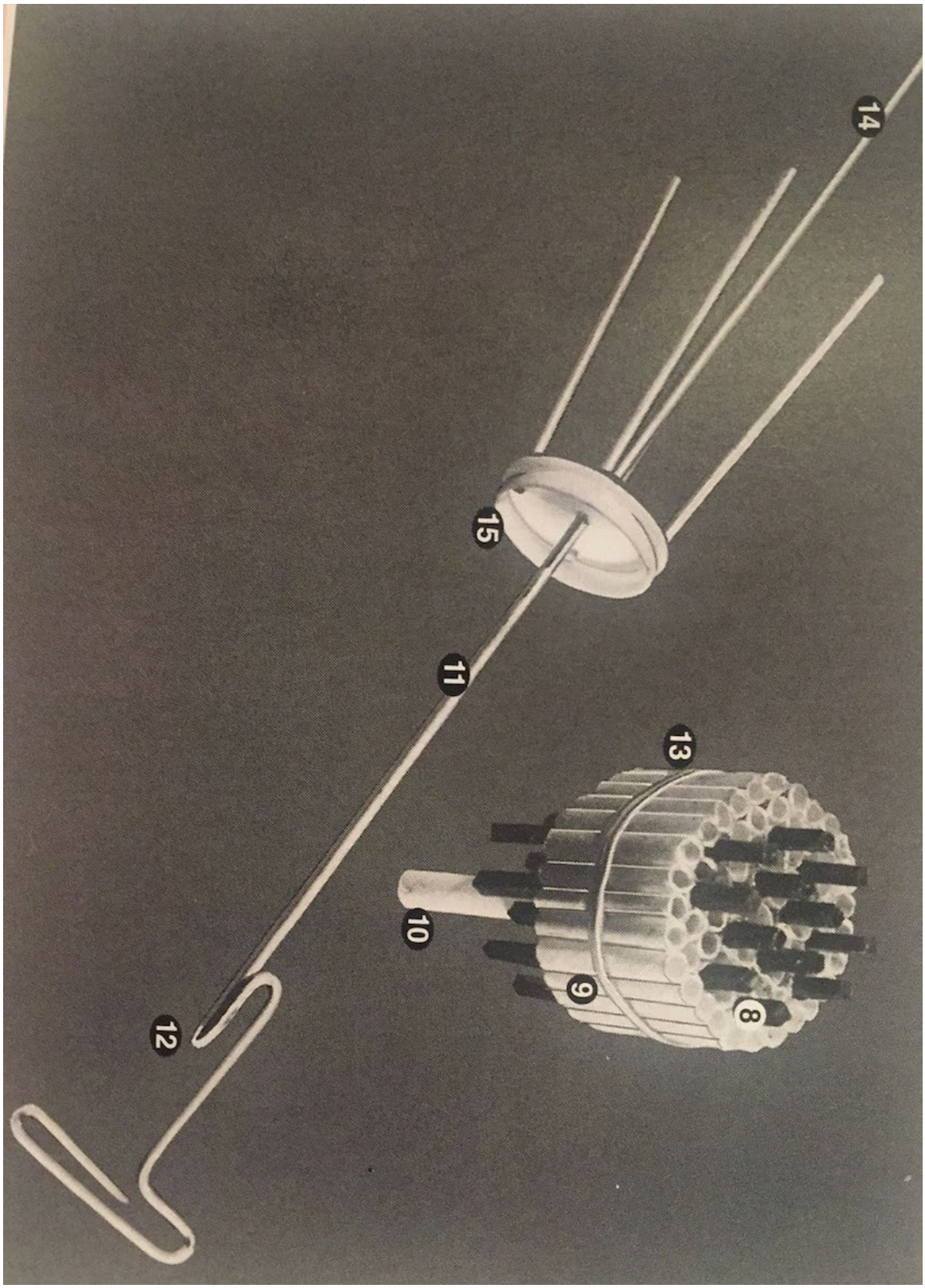

Figure 2: Reactor Controls