Exploratorium Cookbook II
A Construction Manual for Exploratorium Exhibits
by Ron Hipschman and the Exploratorium staff

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Bernoulli Blower  
(Balancing Ball)

Description

A ball floats, bobbing up and down, 3" above a large plastic cone. Upon closer inspection it is found to be floating on a stream of air blowing out of the cone, generated by a large fan beneath it. If the ball is pulled slowly out of the stream of air, a force is felt trying to pull the ball back into the air stream. If the cone is bent to the side, the ball can be suspended in space off to the side of the blower and cone.

Construction

Our version of this exhibit is built with a very compact vane-axial fan (military surplus) 15" high and 12" in diameter. Power requirements for this fan are 230VDC 1.8A (1/3 HP). A highway cone 24" tall is fastened with a collar over its base to the top of the fan housing and cut off at the top so that the diameter of the orifice is 4". The blower's intake is on the bottom and it therefore sits on a hollow square base 33" square and 4" high. The sides of the
Base have been repeatedly drilled through to allow air to get to the fan. A screen accessible from the edge of the base prevents large objects from being sucked up into the fan and expelled at high velocities at people above.

Additions and Changes (1990)

We now extend the tip of the cone with flexible rubber. This prolongs the life of the cone, since the rubber doesn’t crack with repeated squeezing. Nowadays, we use a beach ball that is about 12” in diameter.

Related Exploratorium Exhibits

FLUID MECHANICS
Bernoulli Levitator
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