

Hovercraft

As is the case with most great inventions, the crucial breakthrough that led to the development of the hovercraft was not the result of years of intensive study in an expensive lab. Instead, an unemployed electrical engineer who had turned to boat design was struck by inspiration¹.

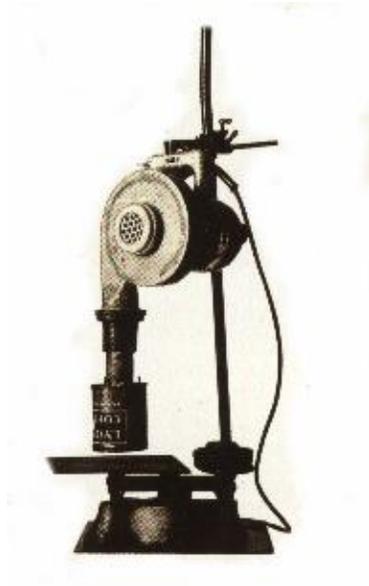
In 1954, Christopher Cockerell developed a boat that rode on a cushion of air. Cockerell's idea was not a new one; people had been experimenting with the concept as far back as the 1870's, but these early designs were unable to produce sufficient force to lift the craft.

Cockerell's innovation was not some new engine design, or a lightweight material or any other such technological leap. Instead, he simply theorized that the air cushion would best be formed by forcing the air through a narrow slot around the edge and directed inwards, as opposed to being pumped directly into the middle of the cushion, which had been the method used by his predecessors.

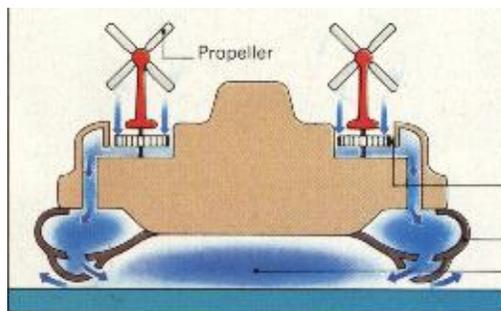
To test his theory, Cockerell prepared two sets of tin cans attached to a blower. The first set-up was a single can with one end removed. Air was blown through the can and the force was measured with a standard kitchen scale. The second set-up involved two cans, one inside the other. Air was pumped between the two cans and out through the narrow slot between them and the force was again measured by a kitchen scale. See page 2 for a diagram of Cockerell's experiment.

Cockerell's theory was correct; the second set-up produced far more downward force than the first. After only one year of development, Cockerell patented his design for the four-ton SRN-1, the first full sized hovercraft, and on July 25 1959, the SRN-1 crossed the English Channel.

Improving on Cockerell's design, most modern Hovercraft use large fans to compress air in pockets above the skirt. The compressed air is then forced through small holes in the rubber skirt and the air is held in place by rubber fingers that touch the surface over which the hovercraft is travelling.



Cockerell's equipment consisted of an air blower, tin cans and a kitchen scale.



An example of a hovercraft based on Cockerell's design. Of special notice is the direction of the airflow, from the outside edge toward the centre of the cushion.

¹ All information and diagrams were found in: How in the World. New York: Reader's Digest, 1990. p. 274