

Microwave oven: An invention by accident

The microwave is an invention by serendipity. Percy LeBaron Spencer was experimenting and testing a magnetron at the Raytheon Company. The magnetron was invented during World War II. As the magnetron produced microwaves which radar could bounce off, it allowed the Allies to pinpoint the exact locations of war machines and arsenals of Nazi. On one occasion, while testing the magnetron after the war, Dr Spencer reached into his pocket for his chocolate bar, and surprisingly discovered it had completely melted. He made the connection between the melted chocolate and the heat-producing magnetron, and tested his theory on a bag of unpopped corn kernels, which then popped up. He also placed an egg in front of the magnetron on the next morning, which then exploded. Dr Spencer is therefore credited with discovering one of the critical components of the microwave oven.



Dr. Spencer fashioned a metal box with an opening into which he fed microwave power. The energy entering the box was unable to escape, thereby creating a higher density electromagnetic field. When food was placed in the box and microwave energy fed in, the temperature of the food rose very rapidly. Dr. Spencer had invented what was to revolutionize cooking, and forms the basis of a multimillion-dollar industry, the microwave oven. The first microwave oven was marketed in 1954, called the RadarRange that was roughly as large and heavy as a refrigerator nearly six feet tall weighing 750 pounds. Rated at 1600 watts, it was so large and expensive that it was practical only for restaurant and institutional use. In 1967, Amana, a division of Raytheon Company, introduced its domestic RadarRange microwave oven, which marked the beginning of domestic microwave ovens. Although, sales were slow during the first few years, partially due to the oven's relatively expensive price, the concept of quick microwave cooking had arrived. In succeeding years, Litton and a number of other companies joined the countertop microwave oven market. By the end of 1971, the price of countertop units began to decrease and their capabilities were expanded.

Microwaves are the shortest of radio waves, with a length of 0.1 millimeter and a high frequency of 3×10^9 Hz. They are found in the non-ionizing portion of the energy spectrum, between radio waves and visible light. "Non-ionizing" means that microwaves do not detach charged particles and produce atoms with an unbalanced plus or minus charge. Microwaves can therefore safely produce heat and not cause food to become radioactive. Microwaves are reflected from most metals but they produce inductive resonance in the atoms of many other substances. It was the discovery of their reaction to metals that led to the invention of radar. It was their ability to produce resonant coupling that led to the invention of the microwave oven. Many thanks to Spencer for making our cooking easier and smoother.

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