

An “iron lung” is a large machine that enables a person to breathe when normal muscle control has been lost or the work of breathing exceeds the person’s ability.

A person who needs an iron lung is placed on a bed that is part of a cylindrical steel chamber. The bed is attached to the front end of the cylinder and can slide out of the cylinder to provide access to the patient. The front end of the cylinder has a hole allowing the head and neck to remain outside the cylinder. A comfortable rubber or flexible plastic gasket surrounds the neck, forming a sealed, air-tight compartment when the cylinder is closed.

A bellows attached to the cylinder moves in and out in a rhythmic motion, increasing and decreasing the air pressure within the cylinder. When the pressure is lower the chest cavity expands, trying to fill this partial vacuum. When the pressure is higher, the chest cavity contracts. This expansion and contraction mimics the physiology of normal breathing and air is inhaled and exhaled into the lungs. The iron lung is often referred to as a “tank” respirator because of its shape, but it is properly identified as a negative pressure respirator.

The first modern and practical respirator nicknamed the “iron lung” was invented by Harvard medical researchers Philip Drinker and Louis Agassiz Shaw in 1927. The inventors used an iron box and two vacuum cleaners to build their prototype respirator. In 1927, the first iron lung was installed at Bellevue hospital in New York City. The first patients of the iron lung were polio patients with paralysis of the breathing muscles. Later John Emerson simplified Philip Drinker’s invention and reduced the manufacturing costs.



An iron lung has ‘port holes’ along both sides that allow access to the patient for medical needs and personal care. When an arm is inserted through these ‘port holes’ a rubber gasket provides an air tight seal. The bed of the iron lung can also slide forward to allow complete access to the patient. An iron lung, or tank respirator, is a very gentle means of providing breathing assistance. Because of its bulk the iron lung has been largely replaced with units that are smaller and portable.