

is only necessary to see how the air pressure is admitted to and taken from the top of the piston to understand the working of the governor. The top of the governor contains a thin, flexible diaphragm, holding a small pin-valve, which regulates the port leading to the top of the piston. The diaphragm is held firmly at outside edge by spring casing; the diaphragm has an additional spring above it and air pressure underneath it. The center of it is free to move up and down as conditions may require. In order to stop the pump air pressure must be admitted past the valve in the diaphragm body to the chamber on top of the piston, so it may force it and the steam valve downward. This air valve is held to its seat by the tension of the adjusting spring on top of the diaphragm body. In order to open it the air pressure under the diaphragm must be slightly stronger than the tension of the spring, so it may raise the diaphragm and valve. When this amount of air pressure is obtained, the diaphragm raises, opening the valve and allowing the air pressure to pass into the chamber on top of the piston, forcing it downward and closing the steam valve. To start the pump again, as soon as the pressure reduced below the required amount, through leakage or other cause, the spring overcomes the weaker air pressure and, forcing the diaphragm down, seats the diaphragm valve and so cuts off the supply of air from the chamber above the piston to escape. The piston is raised by a spring under it, with the assistance of the steam pressure under the steam valve, and as it raises it opens the steam valve and so admits steam to the pump.