

principle and general arrangement of the Suction Producer plant. (A) is the hand-blower for blowing up fires when starting them, (B) is the body of the producer or generator in which the coal is gasified; it is a cylindrical vessel built up usually of steel plates rivetted together and lined with firebrick. It contains a set of grates (E) on which the fuel rests, (D) is the hopper for charging the generator with fuel and is so arranged that the coal may be put into the generator without admitting any air, (E) is an ash tube, leading the ashes to the water-sealed ashpan, (G), where they may be removed at will, without interfering with the operation of the producer, (H) is the vaporizer, sometimes called the evaporator or boiler, which supplies steam for gas making; in this case it contains a number of tubes, like a boiler, which are surrounded by a water chamber partially filled with water. (I) is a wet scrubber where the gas is cooled and cleaned; it is built up of steel plates and has a grate at (J) on which rests a column of coke used for cleaning the gas. (K) is a purifier sometimes called a dry scrubber, which further purifies the gas; it contains two trays as shown, each supporting a layer of sawdust or shavings. (L) is a waste pipe controlled by the valve (M); it is used to conduct the waste gases to the atmosphere, when blowing up the fires in starting.

The method of making the gas is as follows: air from the pipe (R), and steam supplied by the vaporizer are admitted under the grate (E) and are drawn up through the incandescent bed of fuel in the producer. The resulting gases pass out into the vaporizer where, in going through the tubes as shown, they give up a portion of their sensible heat to the water surrounding them, thus generating the steam used in the producer. After going through the water seal and cleaning pot, which beside cleaning the gas considerably, also serves as a trap, preventing its return to the generator, or waste pipe, the gas enters the wet scrubber. A spray of water is introduced at the top of the scrubber as shown, and as the gas passes up through the coke it intermingles with the water, leaving the particles of dust or other matter in the gas, deposited on the coke. Tarry vapors are also arrested here; and the gas is thoroughly cooled. In the dry scrubber the gas is further purified, and the moisture in it is given up to the shavings, or excelsior.

In the Pintsch Suction Producer plant more than one engine may be run from the same producer, which is unusual with suction producer plants. This is accomplished by the automatic regulator shown at (O). On the suction stroke of the engine, gas is drawn from under the dome (P) as well as from the generator and the dome falls. During the other operations of the engines the dome resumes its original position by the aid of a spring (Q) and in so doing is filled with gas again, ready for the next suction stroke. This keeps a constant and even flow of air through the generator.