

gases are formed which expand rapidly and in all directions. Of this property full advantage is taken in an engine to convert the chemical energy contained in the fuels into mechanical energy by way of combustion.

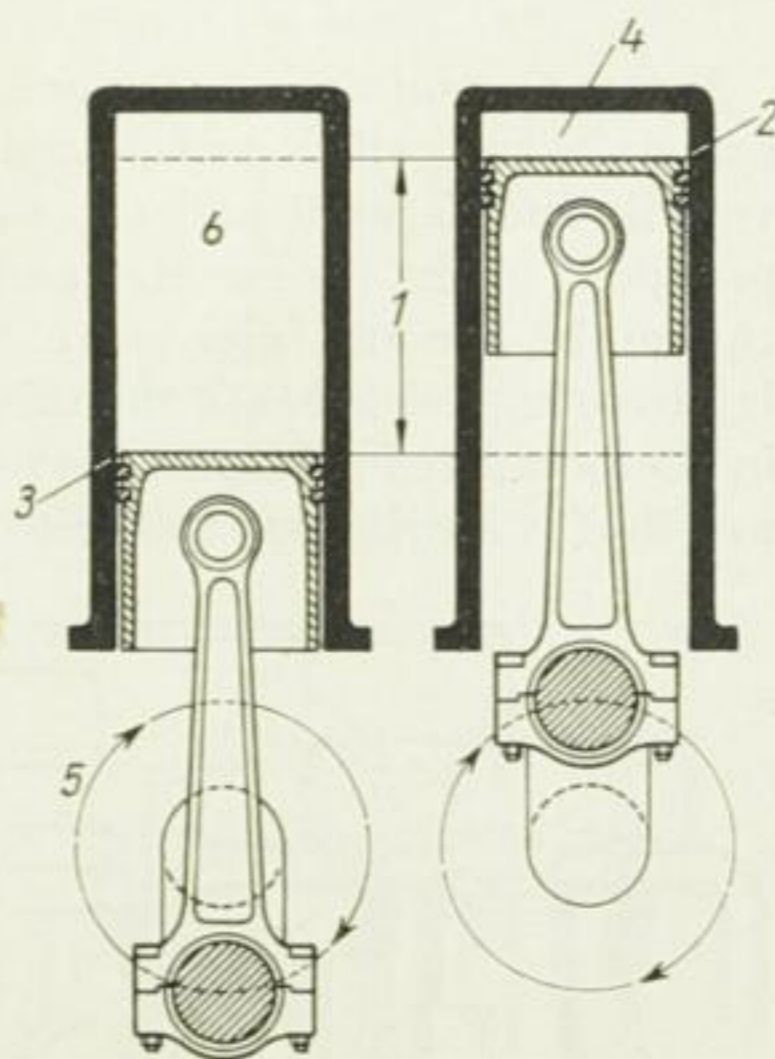
As has already been described on page 26, a cylinder block is provided with several round holes which are called cylinders. At their top they are closed by the cylinder head which also embraces the chambers of combustion. Each cylinder encloses a piston which is connected with the connecting-rod by means of a pivot called gudgeon pin. The gudgeon pin is made fully floating (Fig. 21).

The lower end of the connecting-rod, the so-called big-end bearing, is connected with the crankshaft in such a way that it can be moved on the crankpin. The piston is drawn downwards when the crankshaft is moved through half a revolution.

In this way a suction is produced above the piston. If the crankshaft is further rotated, the piston is moved upwards, compressing the air, and thus rising its temperature above the piston head. This process is called compression. The distance through which the piston moves from its lower position to its upper position is called stroke and the space between these two positions the swept volume or piston displacement, because it is the volume displaced by the piston on its movement from bottom to top position (Fig. 22). The lower position of the piston is called the bottom dead-centre, its upper position the top dead-centre.

Fig. 22. Piston displacement and combustion chamber

- 1 Stroke
- 2 Top dead-centre
- 3 Bottom dead-centre
- 4 Combustion chamber
- 5 Rotary motion of the crankshaft
- 6 Piston displacement



To ensure a continuously repeated upward and downward movement of the piston, fuel must be ignited in the chamber of combustion. The gases produced in the combustion of the fuel expand, thus pressing on the piston and forcing it downwards.