NOTE.—*The application for a Patent has become void.*
This print shows the Specification as it became open to public inspection.

PATENT SPECIFICATION

Convention Date (Germany): June 4, 1917. **145,466**

Application Date (in United Kingdom): June 19, 1920. *No. 16,625/20.*

Complete not accepted.

COMPLETE SPECIFICATION.

Improvements in Constant Pressure Engines.

I, FRITZ GOCKERELL, of 51, Herzogstrasse, Munich, Bavaria, Germany, a German national, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The invention relates to a constant pressure engine in which the fuel is supplied to the engine cylinder in a gaseous state, for which purpose one or more gas chambers are provided in the cylinder head. The main feature of the invention consists in avoiding an increase in the size of the compression chamber, by the gas chambers at the moment of the explosion, this being ensured by the engine piston, after the highest compression is reached, moving still further upwards, which allows a certain shifting of the compression chamber into the gas chambers, owing to which no fluctuations of pressure are produced. It is true that constant pressure engines are known in which the fuel is admitted in gaseous form into separate chambers, but in such engines at the moment of the said chambers being opened, there takes place a very considerable fall of pressure owing to the compression chamber increasing at the time, so that the said engines work more like explosion than constant pressure engines. In known engines there is the disadvantage that on attempting to start the cold engine, an ignition of the fuel fails to take place owing to the quick expansion and transmission of heat to the large surface of the combustion chamber.

[*Price* 1/-]

The accompanying drawings show a two stroke engine.

Figure 1 being a section through the cylinder, whilst,

Figure 2 shows the cylinder looking from the inside.

In the engine cylinder *a*, at its upper end, are cast any desired number of chambers *b*, the capacity of all the chambers being together always less than that of the compression chamber. The latter is indicated by the position of the piston *d* shown dotted. When the piston has reached the said position the slide *c* provided with slots *e* is turned so that the slots *e* coincide with the chambers *b*, owing to which the interior of the cylinder is connected with the interior of the chambers.

The working of the whole construction is as follows:—

When the piston *d* moves upwards, the charging of air above it is strongly compressed. When the piston on its upstroke reaches the position shown dotted, the maximum compression pressure will be reached, but not, as usual, at the same time the upper dead centre position of the piston. First of all, the gas chambers *b* are opened by the turning of the slide *c* provided with the slots *e*, so that the gases in the said chambers will be ignited by the hot combustion air. In order that it should not be possible, at the moment when the gas chambers are opened, that the compression space proper increases, the piston *d* is at the same time moved upwards quite close to the bottom

of the slide *c*, so that on the real uppermost dead centre position of the piston being reached, the gas chambers form the compression and combustion chamber. The opening of these chambers *b* is effected very quickly by means of cams acting on the valve gear, and at the same rate as the displacement of the compression chamber, so that only very slight fluctuations of pressure take place. The discharge of the waste gases, as well as the new charging of the cylinder with air, is effected in the known manner through slots in the cylinder. It is essential that the fuel used for this engine, is acetylene gas which, owing to its favourable proportion of mixing, forms the basis of the present invention. An acetylene gas when containing 40 parts air to 1 part gas, is still capable of ignition, very small gas chambers *b* are obtained, the volume of which is equal to that of the compression space. In this way it becomes unnecessary to provide pumps, as the gas chambers are filled by the energy of flow of gas.

If nevertheless it should be desired to enable the engine to be worked with liquid fuel, even then the feature of the present invention remains the gas chamber. In this case it is necessary to use a small pump driven by the engine. This pump draws from the carburettor a very rich gas mixture, maintained far above the limits of explosion, and forces it at a pressure which corresponds to the lower mixing proportion of the fuel, into the gas chambers, owing to which the cubic capacity of the latter can remain equal to that of the compression chamber.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A constant pressure engine for gaseous fuels, with a gas chamber kept separate from the interior of the cylinder by a slide, which chamber is opened at the suitable moment by the release of the conduit closed by the slide register in order that with the highly heated combustion air an explosive mixture is formed, characterised by the engine piston, after the highest compression is reached by the connection of the gas chamber to the cylinder space, moving still further upwards, so that the compression space is not increased when the ignition takes place.

2. The constant pressure engine cylinder substantially as described or substantially as illustrated in the accompanying drawings.

Dated this 18th day of June, 1920.

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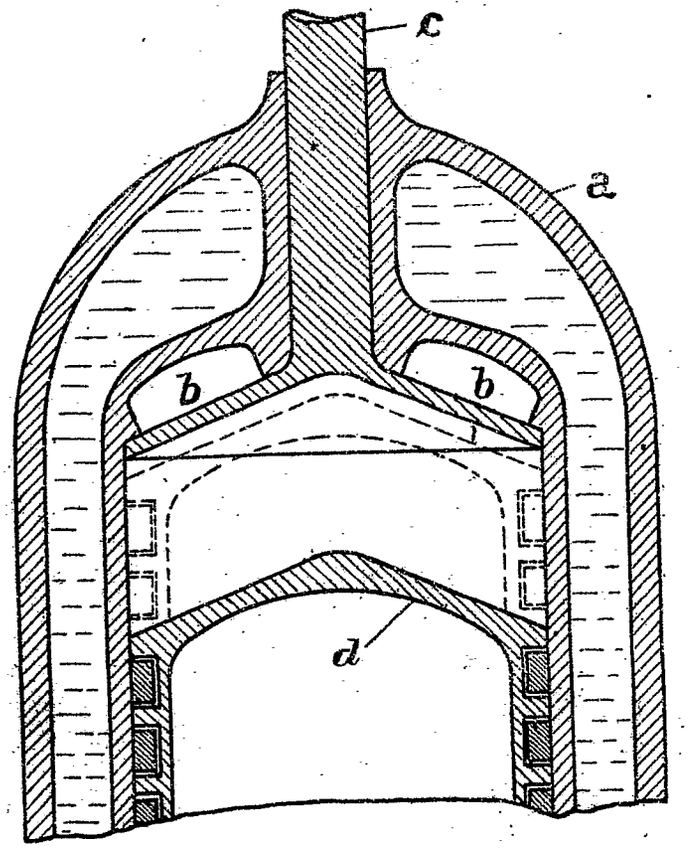
Fig. 1



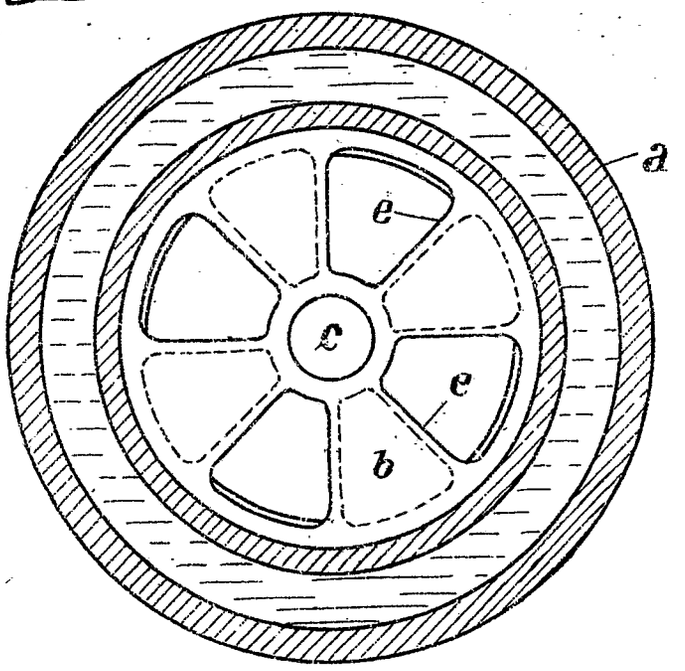


Fig. 2

Malby&Sons, Photo-Litho