(No Model.)

G. W. DAIMLER.

Gas Motor Engine.

No. 232,243. Patented Sept. 14, 1880.

Fig. 1

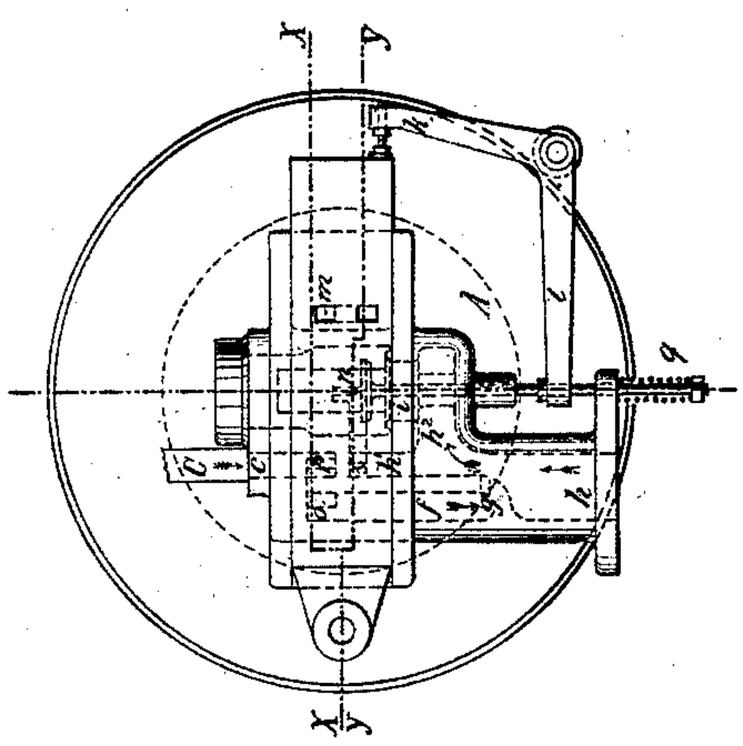


Fig. 4

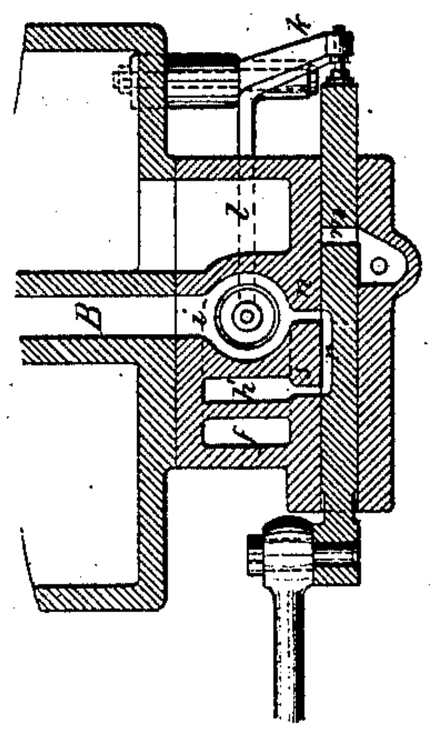


Fig. 2

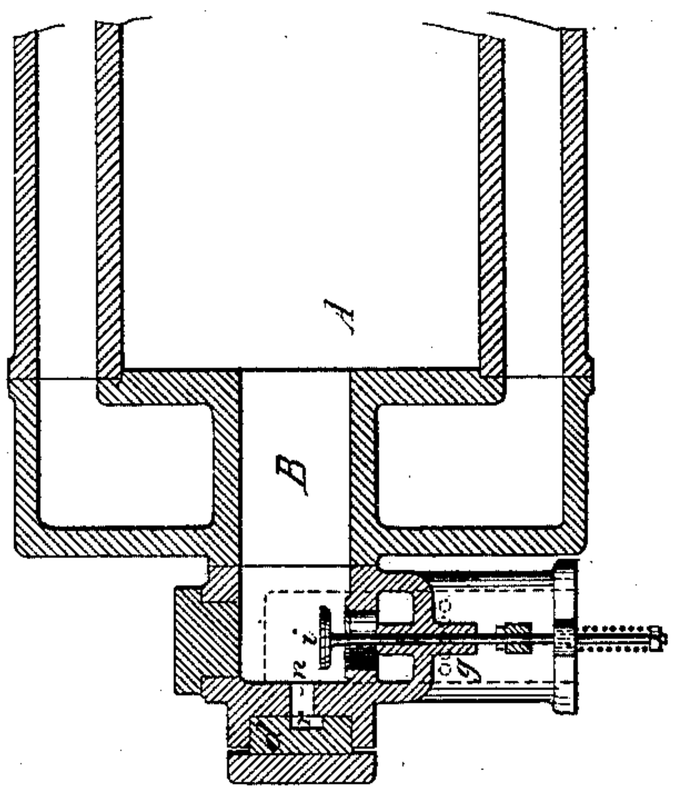
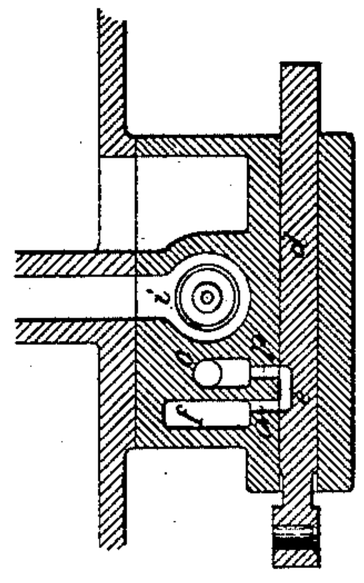


Fig. 3



Witnesses:

Jas. E. Hutchinson.

Albert H. Norris.

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by James L. Norris.

Atty.

UNITED STATES PATENT OFFICE.

GOTTLIEB W. DAIMLER, OF DEUTZ-ON-THE-RHINE, GERMAN EMPIRE.

GAS-MOTOR ENGINE.

SPECIFICATION forming part of Letters Patent No. 232,243, dated September 14, 1880.

Application filed July 13, 1880. (No model.) Patented in England January 26, 1880.

To all whom it may concern:

Be it known that I, GOTTLIEB WILHELM DAIMLER, of the Gas Motoren Fabrik Deutz, at Deutz-on-the-Rhine, in the German Empire, have invented a new and useful Improvement in Gas-Motor Engines, for which I have obtained a patent in Great Britain, No. 343, bearing date January 26, 1880, and of which the following is a specification.

This invention relates to motor-engines wherein the piston of the engine-cylinder is actuated by the gaseous pressure resulting from the combustion of a mixture of air and combustible gas or vapor introduced into the cylinder.

The introduction of such combustible mixture was heretofore mostly effected by means of a slide, which in engines of large dimensions thus became inconveniently large. According to the present invention this inconvenience is obviated by the use of an arrangement whereby the whole or the greater part of the combustible charge is admitted into the working-cylinder through a separate valve, so that the slide can be made of smaller dimensions. For this purpose an arrangement is employed which is shown on the accompanying drawings, in which—

Figure 1 shows an end view of the engine-cylinder with valve-gear. Fig. 2 shows a vertical section of the rear end of the cylinder and ports; and Figs. 3 and 4 show sectional plans taken, respectively, on lines X X and Y Y, Fig. 1.

A is the working-cylinder; B, the inlet-passage for the combustible charge. The combustible gas or vapor entering through the passage *c*, Figs. 1 and 3, passes thence through opening *p*, Fig. 3, into cavity *e* in the slide *d*, and thence into the passage *f* through opening *o*. From passage *f* the gas issues through a number of small openings at *g* into the passage or mixing-chamber *h*, so as to mix intimately with the air entering through the open lower end of such chamber. The mixture of gas and air passes partly through the channel *h'*, opening *s*, slide-cavity *r*, and igniting-port *n* into the cylinder-port B, while the greater part passes through the channel h^2 to the under side of the valve *i*, situated in port B, so as on the opening thereof to issue into the cylinder. The opening of the valve for this purpose is effected at the proper time from any convenient moving part of the engine, such as by a bell-crank lever, *k l*, actuated by the motion of the slide *d*, as shown, the closing of the valve being effected by a spring, *q*.

The ignition of the charge is effected by a small charge of burning gas in the cavity *m* of the slide, ignited by a stationary gas-jet in the usual manner, and brought by the motion of the slide in front of the igniting-port *n*. The admission of the combustible charge is effected when the slide is in the position shown in Figs. 3 and 4, when the cavity *e* of the slide establishes the communication between openings *o* and *p*, while the cavity *r* establishes the communication between the openings *s* and *n*, the valve *i* being at the same time raised from its seat by means of the lever *k l*, acted upon by the slide *d*, as shown at Fig. 1.

In some cases the combustible gas may be made to pass directly from *c* into passage *f* without passing through the slide.

Having thus described the nature of my invention and the best means I know of putting it in practice, I claim—

In gas-motor engines, the herein-described double connection of the inlet-port B of the cylinder with the mixing-chamber *h* for gas and air, such double connection being effected by the aperture *s*, the slide-cavity *r*, the igniting-port *n*, and the valve *i*, the whole being arranged substantially as shown and described, whereby the combustible charge is made to enter the cylinder both through the igniting-port and through the valve *i*, as set forth.

In testimony whereof I have hereunto set my hand and seal, in the presence of two subscribing witnesses, this 26th day of June, A. D. 1880.

GOTTLIEB WILHELM DAIMLER. [L. S.]

Witnesses:

GUSTAV KLEINJUNG,

EDUARD KIRSCHSIEPER.