

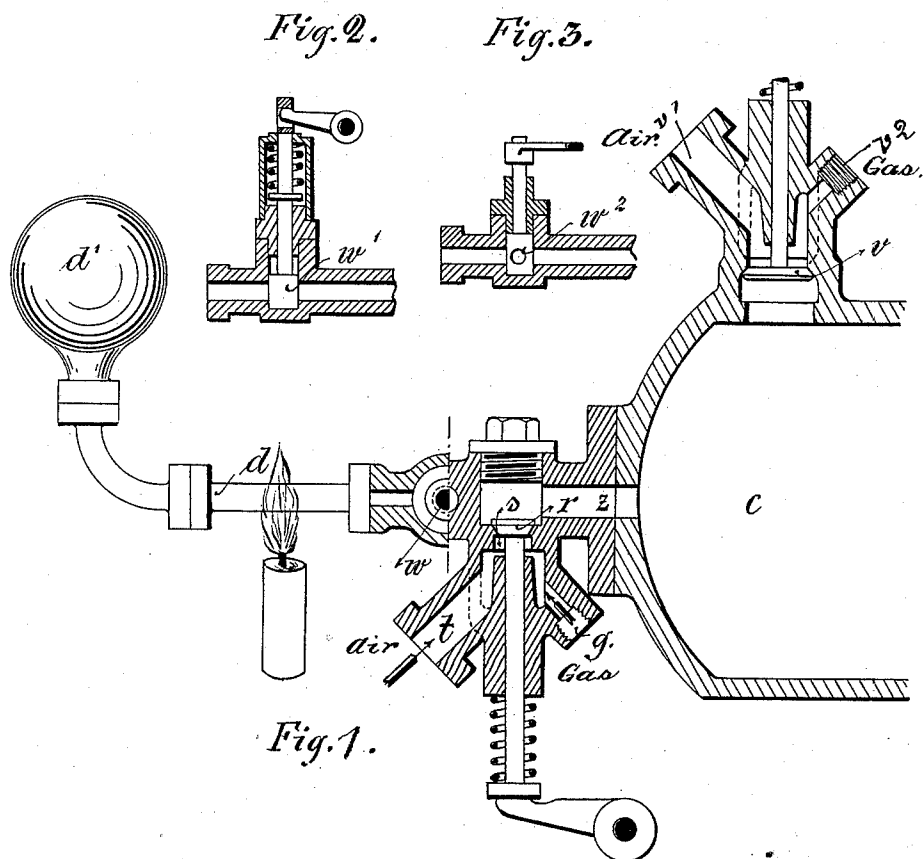
(No Model.)

E. KASELOWSKY.

IGNITING DEVICE FOR GAS OR PETROLEUM MOTORS.

No. 463,231.

Patented Nov. 17, 1891.



Witnesses:
W. W. Newski.
G. A. Taube

Inventor:
Emil Kaselowsky
by *Arthur R. Parke*
Attorneys.

UNITED STATES PATENT OFFICE.

EMIL KASELOWSKY, OF BERLIN, GERMANY.

IGNITING DEVICE FOR GAS OR PETROLEUM MOTORS.

SPECIFICATION forming part of Letters Patent No. 463,231, dated November 17, 1891.

Application filed December 10, 1890. Serial No. 374,208. (No model.) Patented in Germany September 28, 1889; No. 54,284; in England March 24, 1890, No. 4,574; in Switzerland April 5, 1890, No. 2,097, and in Italy November 3, 1890, No. 28,504.

To all whom it may concern:

Be it known that I, EMIL KASELOWSKY, a subject of the King of Prussia, German Emperor, and resident of Berlin, in the Kingdom of Prussia, German Empire, have invented certain new and useful Improvements in Igniting Devices for Gas or Petroleum Motors, (for which I have obtained patents in Germany, No. 54,284, dated September 28, 1889, and by Patent of Addition No. 54,284, dated March 31, 1890; in Italy, No. 28,504, dated November 3, 1890; in Switzerland, No. 2,097, dated April 5, 1890, and in Great Britain, No. 4,574, dated March 24, 1890,) of which the following is a full and exact specification.

Hitherto the ignition of gas-motors has generally been effected by means of slide or rotary valves; but, as these valves are subject to considerable inconvenience in working, the object of my invention is to overcome these difficulties with a satisfactory result in practice.

My invention consists in the use of an igniting-tube for igniting the explosive gases in the cylinder because this method of ignition requires a less number of movable parts than is the case with the employment of other devices. The igniting-tube, with two inlet devices for the gases to be exploded, forms the essential part of my invention, hereinafter described.

In order to make my invention more clear, I refer to the accompanying drawings, in which similar letters denote similar parts throughout the different views, and in which—

Figure 1 is a longitudinal section through the cylinder with its two inlets and the igniting device. Figs. 2 and 3 show two modifications of the valve W.

The construction shown in the drawings is designed to overcome all the difficulties experienced by the use of former arrangements. I employ two inlet devices for the explosion gases, and the igniting-tube is arranged close to one of these inlet devices and shut up against this inlet by any suitable means, as a valve, slide, or similar parts.

For the purpose of collecting the products of combustion of the igniting-tube when these are pressed back by the fresh igniting cur-

rent of explosive gases, I provide at the other end of said igniting-tube a hollow space of any suitable form or shape.

In the accompanying drawings, *c* is the working-cylinder, and *v* is the inlet-valve for the same. The air passes in through the tube *v'*, and the gas is drawn in through the pipe *v''*, so that an explosive mixture results.

z is a channel leading from the cylinder *c* to the valve *r*, the latter being the inlet-valve for the explosive igniting mixture. *t* is the tube through which the air enters, and *g* is the tube through which the gas is admitted. This valve can also be used to admit a very explosive mixture to the cylinder, so that the explosion of this portion of the contents of the cylinder is effected when pressed in the channel *z*; but it is not necessary to cause the whole working mixture to be of the same consistence and to bear the same rate of explosion. The working of the motor is thus rendered cheaper when operated by means of the two different valves according to my invention.

The diameters of the air and gas inlets may be arranged so as to produce the required explosive mixture and may be regulated according to convenience by means of slides or tubes inserted in this inlet-tube. The valve *w* is actuated by the motor in the usual way, and the igniting-tube *d*, which is made of any suitable material, preferably of porcelain, is opened and closed similarly. The empty space or reservoir behind the igniting-tube *d* is shown by *d'*.

It is evident that the explosive mixture entering the channel *z* must always clear away the products of combustion left by the last explosion, so that said channel *z* may be filled with fresh explosive mixture when the compression in the cylinder commences. When said compression is finished, the valve *w* is opened by the motor, and then the explosive mixture contained in said channel *z* enters the igniting-tube *d*, pressing back thereby the residual products of the former explosion into the reservoir *d'*. As a matter of course the ignition should be effected when the piston has passed over the dead point or center and is moved forward, so that the primary action due to the explosion is not effected at or near

to the dead point or center of the motor, but at a later period in order to increase the mechanical effect upon the piston.

It is apparent that the igniting-tube itself, which is kept at a glowing heat in the usual way, must be filled with explosive gases, and that no residual products from the cylinder may enter the channel *z* and the igniting-tube *d*. When the ignition takes place, the explosion is communicated to the whole of the mixture contained in the channel *z*, and the required impulse of this explosive mixture is effected within the working-chamber. The ignition of said working mixture contained in the cylinder consisting of an explosive mixture and of the residual products of the last explosion is thus obtained and utilized to the best advantage.

These improvements may be employed for gas-motors, and also for any hydrocarbon-vapor motors. The ignition device is perfectly reliable in operation with any explosive material hitherto used with motors.

Having thus fully described the nature of this invention, what I desire to secure by Letters Patent of the United States is—

1. The combination of the inlet device *v*

with the inlet device *r*, as shown, and with the ignition device *d d'*, arranged so as to be in connection with said inlet device *r*, and the valve *w*, operated by the motor, for the purpose as described and as shown by the drawings.

2. The combination of the inlet-valve *v* with the inlet-valve *r*, leading to the channel *z*, and with the igniting-tube *d*, hollow space *d'*, said tube *d* being closed or shut off from the channel *z* by a valve *w*, operated by the motor, for the purpose as described.

3. The combination of the inlet-valve *v*, provided with gas-inlet *v²* and air-inlet *v'*, with the inlet-valve *r*, furnished with a gas-inlet *g* and air-inlet *t* and leading to the channel *z*, and also with the igniting-tube *d*, hollow space *d'*, and tube *d* being shut off from the channel *z* by a valve *w*, operated by the motor, for the purpose as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

EMIL KASELOWSKY.

Witnesses:

BERNHARD STEIN,
ROBERT DESSLER.