

(No Model.)

J. E. WEYMAN & A. J. & J. A. DRAKE.
GAS OR OTHER LIKE MOTOR.

No. 542,124.

Patented July 2, 1895.

Fig. 1.

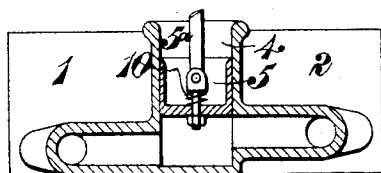


Fig. 2.

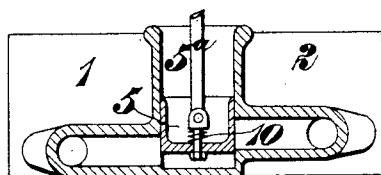


Fig. 3.

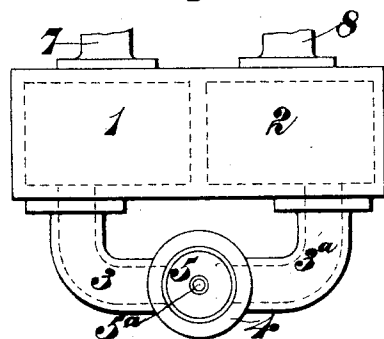
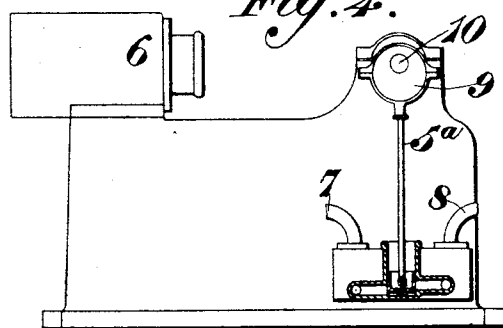


Fig. 4.



Witnesses

W. Cross

Wm. London.

Inventors

James Edmund Napman

Arthur James Drake

James Arthur Drake

UNITED STATES PATENT OFFICE.

JAMES EDWARDES WEYMAN, ARTHUR JAMES DRAKE, AND JAMES ARTHUR DRAKE, OF GUILDFORD, ENGLAND.

GAS OR OTHER LIKE MOTOR.

SPECIFICATION forming part of Letters Patent No. 542,124, dated July 2, 1895.

Application filed November 16, 1893. Serial No. 491,131. (No model.) Patented in England March 10, 1892, No. 4,735; in Germany June 25, 1892, No. 66,958; in Belgium July 8, 1892, No. 100,492; in France July 8, 1892, No. 222,871, and in Austria-Hungary July 15, 1892, No. 36,665.

To all whom it may concern:

Be it known that we, JAMES EDWARDES WEYMAN, ARTHUR JAMES DRAKE, and JAMES ARTHUR DRAKE, subjects of the Queen of Great Britain and Ireland, residing at Guildford, in the county of Surrey, England, have invented Improvements in or Relating to Gas or other Like Motors, (for which Letters Patent have been granted in Great Britain, No. 4,735, dated March 10, 1892; in Germany, No. 66,958, dated June 25, 1892; in Belgium, No. 100,492, dated July 8, 1892; in France, No. 222,871, dated July 8, 1892, and in Austria-Hungary, No. 36,665, dated July 15, 1892,) of which the following is a specification.

This invention has for its object to lessen or prevent the noise usually caused by the exhaust-gases escaping from the cylinders of motors, such as are worked by the explosion of combustible charges of gas or hydrocarbon vapor and air. For this purpose there is used, in conjunction with the motor-cylinder, one or more chambers, (hereinafter called silencing-chambers,) into and through which the exhaust-gases are caused to pass on their way from the motor-cylinder to the external atmosphere, the outlet for connecting the cylinder with the external atmosphere, or for connecting one cylinder with another when more than one are used, being controlled by a suitably-operated valve or valves, as we will now proceed to explain by reference to the accompanying drawings, in which—

Figures 1 and 2 each show, partly in side elevation and partly in vertical section, a construction of apparatus according to this invention in which two silencing-chambers are used, the controlling-valve between the said chambers being shown in its open position in Fig. 1 and in its closed position in Fig. 2. Fig. 3 is a plan of the said apparatus. Fig. 4 is a side elevation to a smaller scale showing so much of a gas, oil, or other like engine as is necessary to illustrate the application thereto of apparatus according to this invention.

1 and 2 are two silencing-chambers connected by pipes 3 3^a and an intermediate valve-case 4 fitted with a valve 5, one of said chambers, namely, 1, being arranged to be placed in

communication with the exhaust-port of the motor-cylinder 6 by a pipe 7, so as to receive the gases exhausting therefrom, the other chamber, viz., 2, being placed in communication with the external atmosphere by a pipe 8. The pipes 7 and 8 may be variously arranged. Thus in Figs. 1, 2, and 3 they are shown as connected to the sides of the chambers opposite to those to which the pipes 3 3^a are connected and in Fig. 1 as connected to the tops of the said chambers. The valve 5, which is shown of piston-type, is worked by any suitable means, such as by an eccentric 9 on the crank-shaft 10 of the motor, so as to open and close the connection between the two chambers at intervals corresponding to the strokes of the engine, the communication being closed during the time the exhaust-gases are passing from the motor-cylinder into the first chamber 1 and opened after the gases have expanded into the said chamber, whereupon the said exhaust-gases are allowed to pass into the second chamber, whence they escape into the external atmosphere with little or no noise.

To provide for explosions that might occur in the first chamber, there is preferably arranged between the valve 5 and the rod 5^a by which it is operated a spring 10, such as a coiled spring, by means of which the piston-valve is permitted to yield and open when necessary and so permit of the escape of the gases under pressure independently of the ordinary action of the valve.

When one silencing-chamber only is used, the pipe 3^a would be placed in direct communication with the external atmosphere, the communication between this pipe and the pipe 3^a being controlled by a spring-valve 5, as before.

As will be obvious, instead of placing the silencing chamber or chambers side by side, as shown, they may be otherwise arranged. Thus they may be placed one upon the other, and either in close proximity to the motor or not, as may be desirable.

What we claim is—

1. In a gas or other like motor, the combination with the motor cylinder, of a silencing

chamber having its inlet in communication with the exhaust port of said cylinder, and a positively operating yielding valve arranged to control the outlet of said chamber and
5 adapted to open when subjected to excessive pressure substantially as herein described for the purposes specified.

2. In a gas or other like motor, the combination with the motor cylinder, of silencing
10 chambers, one having its inlet connected with the exhaust port of said cylinder, and the other having its outlet in communication with the external atmosphere, a pipe connection
15 between said chambers, a valve for controlling the flow of exhaust gases through said pipe connection from one chamber to the other, and means for operating said valve substantially as herein described for the purpose set forth.

20 3. In a gas or other like motor, the combination with the motor cylinder, of silencing chambers, one having its inlet connected with the exhaust port of said cylinder, and the
25 the external atmosphere, a pipe connection between said chambers, a spring valve arranged to control the flow of exhaust gases

from one chamber to the other through said pipe connection and adapted to yield and open when subjected to excessive pressure, 30 and means for operating said valve substantially as herein described for the purposes specified.

4. In a gas or other like motor, the combination with the motor cylinder, of silencing 35 chambers 1 and 2 pipes 3 3^a with interposed valve chamber 4 connecting said chambers, pipes connecting the inlet of said chamber 1 with the exhaust port of said motor and the outlet of said chamber 2 with the external 40 atmosphere, a piston valve 5 arranged within said valve chamber, a rod 5^a for operating said valve, a spring arranged between said valve and said rod, and means for operating said rod substantially as herein described. 45

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

JAMES EDWARDES WEYMAN.

ARTHUR JAMES DRAKE.

JAMES ARTHUR DRAKE.

Witnesses:

WILLIAM CROSS,

M. LORDOR.