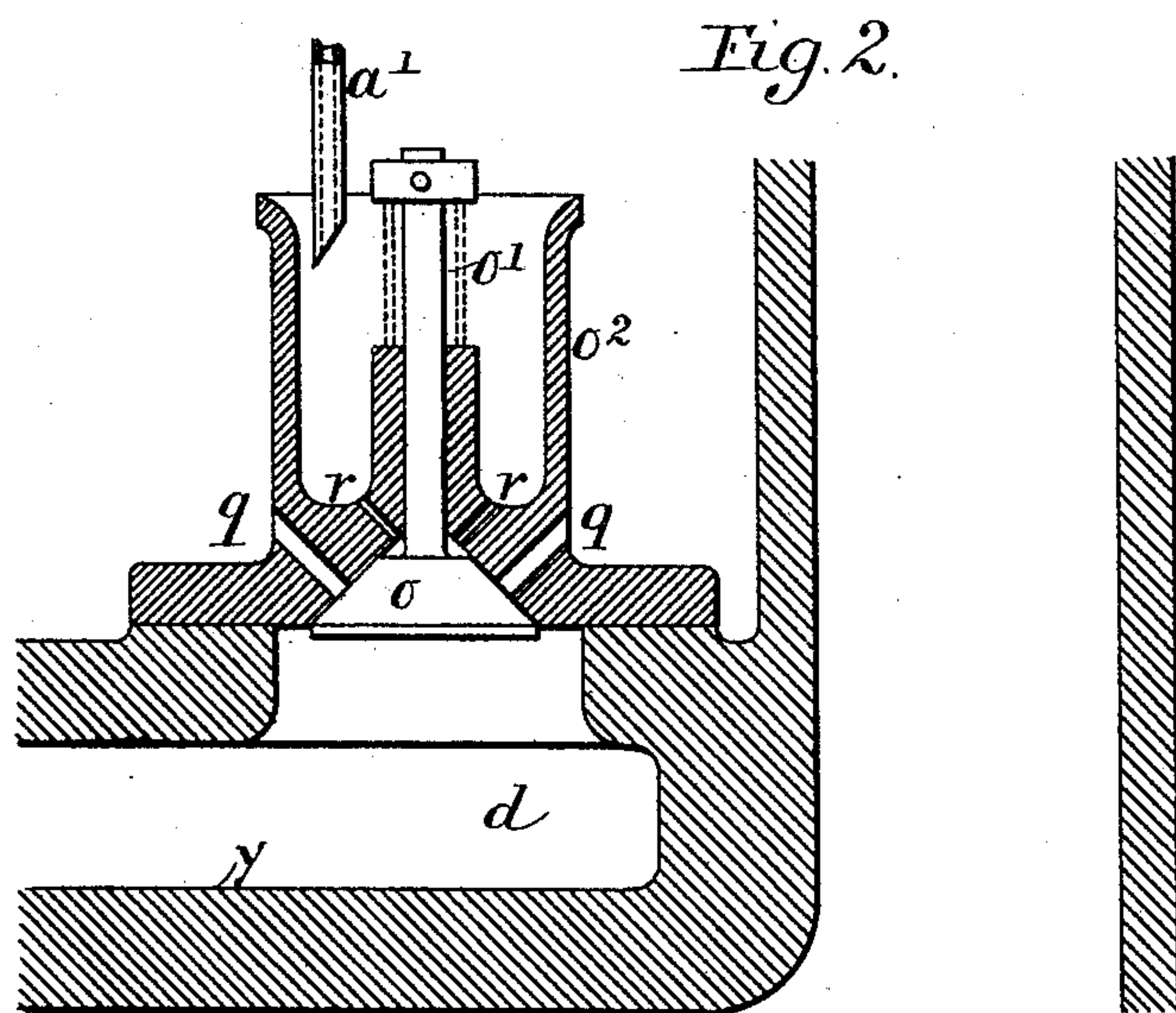
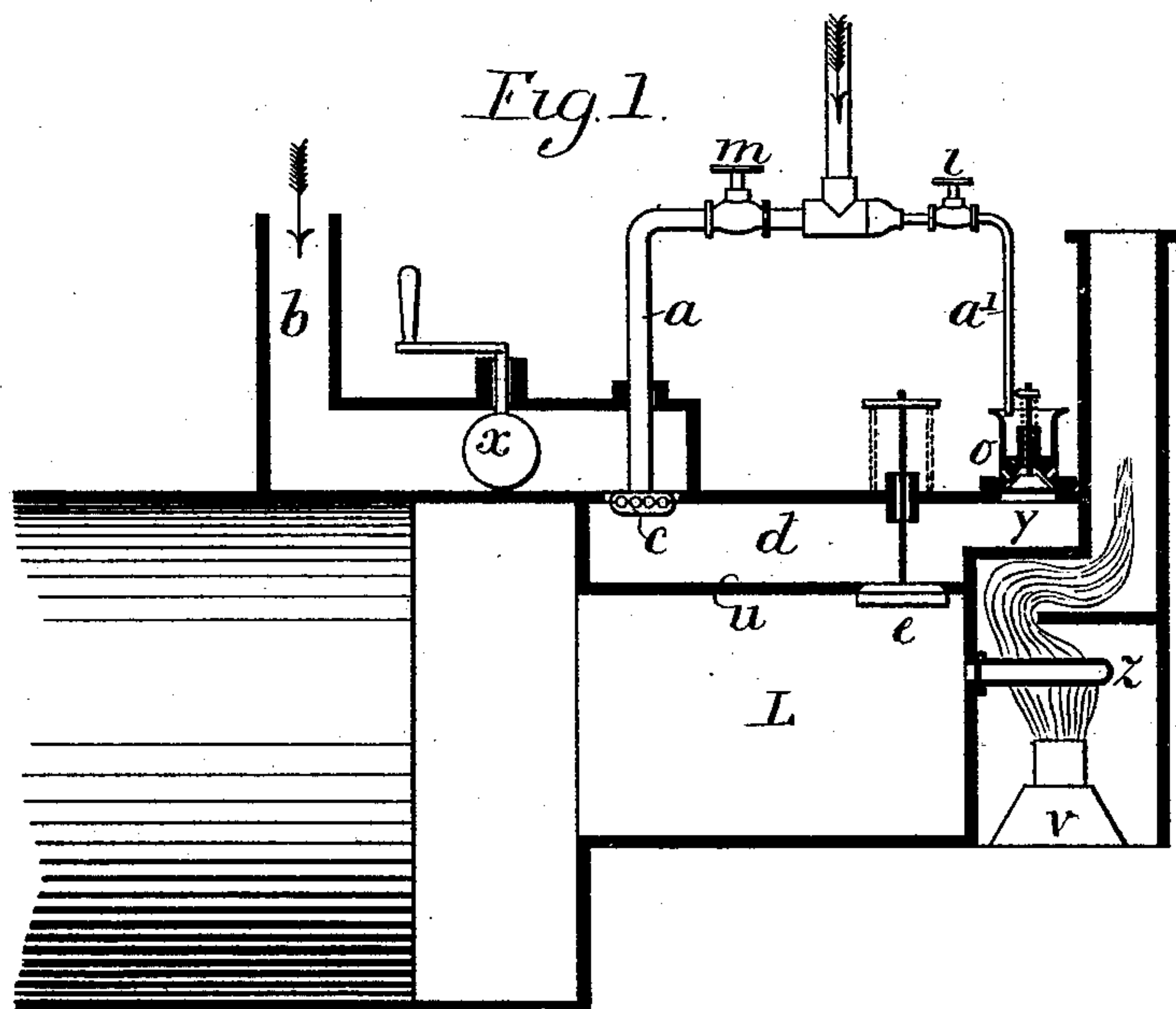


(No Model.)

H. SCHUMM.  
OIL MOTOR ENGINE.

No. 482,201.

Patented Sept. 6, 1892.



Witnesses:-  
J. A. Ruthenford.  
Robert Everett.

Inventor:  
Hermann Schumm  
By *J. M. Norris*  
Attorney.



# UNITED STATES PATENT OFFICE.

HERMANN SCHUMM, OF COLOGNE-DEUTZ, GERMANY, ASSIGNOR TO THE  
GAS-MOTOREN-FABRIK-DEUTZ, OF SAME PLACE.

## OIL-MOTOR ENGINE.

**SPECIFICATION** forming part of Letters Patent No. 482,201, dated September 6, 1892.

Application filed February 27, 1892. Serial No. 423,027. (No model.) Patented in Belgium January 7, 1892, No. 97,825, and in Italy February 3, 1892, LXI, 92.

*To all whom it may concern:*

Be it known that I, HERMANN SCHUMM, a citizen of Switzerland, residing at Cologne-Deutz, in the Empire of Germany, have invented new and useful Improvements in Petroleum or Oil Motor Engines, (for which I have obtained patents in Belgium, dated January 7, 1892, No. 97,825, and in Italy, dated February 3, 1892, Vol. LXI, No. 92, and for which I have made an application for patent in Great Britain, which patent when granted will bear date December 31, 1891, No. 22,847,) of which the following is a specification.

Motor-engines that are worked by the combustion of a mixture of air and heavy hydrocarbon vapor require to be heated for some time before starting.

The present invention has for its object to shorten such time of heating as much as possible and to enable the engine to be started with ease.

For this purpose an arrangement of apparatus is employed, which I will describe with reference to the accompanying drawings, in which—

Figure 1 shows a part-vertical longitudinal section of the engine-cylinder with explosion-chamber and devices in connection therewith. Fig. 2 shows an enlarged vertical section of the auxiliary valve *o*.

*L* is the explosion-chamber of the cylinder in which the mixture of air and petroleum or oil vapor is ignited by the igniting-tube *z* on the charge having been compressed. Above the chamber *L* is a vaporizing-chamber *d*, into which the air required for the explosive charge is admitted through a passage *b*, in which is provided a throttle or other valve *x*, by which the admission of air can be cut off. The oil-supply passes into the vaporizing-chamber through a pipe *a*, with a finely-perforated rose *c*, and the air entering through *b*, in impinging upon the petroleum-spray issuing from *c*, mixes intimately therewith, and this mixture, after becoming heated by contact with the hot external surface *u* of the explosion-chamber, so as to vaporize the petroleum, passes through valve *e* into the explosion-chamber, the valve *e* being kept closed

by a spring and opened either automatically by atmospheric pressure or by any suitable lever arrangement on the suction-stroke of the engine-piston.

For the purpose of starting the engine the following additional devices are employed: A valve *o*, held closed by a spring *o'*, opens into the vaporizing-chamber *d* at a point above the extended wall *y* of the chamber, which is heated directly by the flame of the lamp *v*, which also serves to heat the igniting-tube *z*. The valve *o* closes, first, small openings *r*, leading from a cup *o<sup>2</sup>*, into which oil can be admitted from a branch pipe *a'* on the pipe *a*, provided with stop-cocks *m* and *i*; secondly, the valve also closes passages *q*, leading from the atmosphere.

The action of the apparatus is as follows: When the engine requires to be started, the lamp *v* having been lighted so as to heat both the igniting-tube *z* and the wall *y* of the chamber *d*, the valve *x* in the air-supply passage *b* is closed, as is also the stop-cock *m* on the oil-supply, while the cock *i* is opened, so as to admit oil into the cup *o<sup>2</sup>*. On the engine-piston being now made to perform its suction-stroke by turning the fly-wheel by hand the valve *e* will open, so as to cause a reduction of pressure to be effected in the vaporizing-chamber. The atmospheric pressure will then force open the valve *o*, thereby admitting oil-spray through the small passages *r* and air through the passages *q*, and this mixture in impinging directly upon the heated surface *y* will become heated, so as to vaporize the petroleum and form an explosive mixture, which, on entering the explosion-chamber and becoming compressed by the compression-stroke of the piston, will be ignited and will propel the piston through its working stroke. After this action has been repeated a few times the other parts of the vaporizing-chamber will have become sufficiently heated to effect the vaporization of the petroleum by contact with the surface *u*, whereupon the cock *m* on the main petroleum-supply pipe *a* is opened, as is also the valve *x* of the air-supply, and the cock *i* of the branch supply is closed. The valve *o* being



thus thrown out of action, the engine is now worked by the oil and air supply from *a* and *b* in the ordinary manner.

5 Having thus described the nature of this invention and the best means I know of carrying the same into practical effect, I claim—

10 In a petroleum or oil motor engine, the combination, with a vaporizing-chamber on the explosion-chamber of the engine, of an automatic valve *o*, which closes auxiliary air and oil supply passages *q* and *r*, a stop-cock *m* for closing the ordinary oil-supply pipe *a*, a valve *x* for closing the ordinary air-supply passage *b*, an auxiliary oil-supply pipe *a'*, with stop-  
15 cock *i*, and an extended wall *y* of the vaporizing-chamber heated by a lamp, so that for

starting the engine the valves *m* and *x* are closed while valve *i* is opened, so as to admit oil and air through the valve *o* to the heated part *y* of the vaporizing-chamber, and thus 20 form a heated explosive charge that passes through valve *e* into the explosion-chamber, substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of 25 two subscribing witnesses, this 12th day of February, A. D. 1892.

HERMANN SCHUMM.

Witnesses:

SIBILLA LANG,  
H. A. MAXWELL.