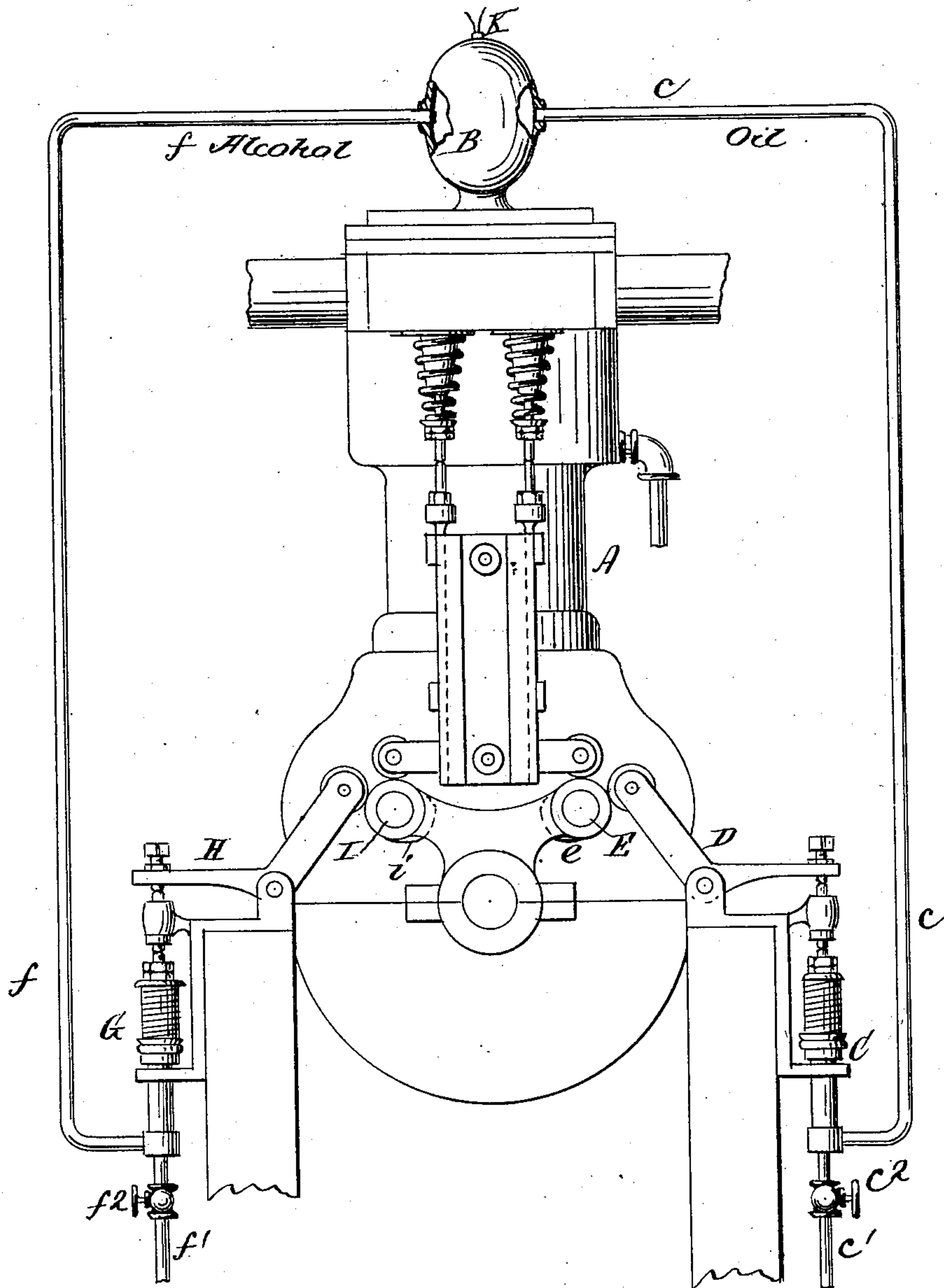


PATENTED DEC. 22, 1903.

## KEROSENE OIL ENGINE.

NO MODEL.



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# UNITED STATES PATENT OFFICE.

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ASTORIA, NEW YORK, ASSIGNORS TO SAID LOW.

## KEROSENE-OIL ENGINE.

SPECIFICATION forming part of Letters Patent No. 747,620, dated December 22, 1903.

Application filed March 4, 1903. Serial No. 146,041. (No model.)

*To all whom it may concern:*

Be it known that we, ABBOT AUGUSTUS LOW, residing at Horseshoe, St. Lawrence county, and AUGUST WASSMANN, residing at Halletts Point, Astoria, Queens county, State of New York, citizens of the United States, have invented certain new and useful Improvements in Kerosene-Oil Engines, of which the following is a specification sufficient to enable others skilled in the art to which the invention appertains to make and use the same.

Our improvements relate to motors in which hydrocarbon vapor is exploded by means of an ignition-surface heated to the requisite degree, and particularly to the class of motors in which kerosene-oil is injected into the ignition-chamber to be vaporized and exploded. In this class of motors a preliminary heating of the ignition chamber or surface is essential before the engine will run continuously, and this preparatory heating has been effected in various ways, as by the application of external heat and by other comparatively slow methods.

One of the objects of our present invention is to expedite this preliminary heating of the igniter by means of the injection of alcohol.

Another object is the provision of means whereby alcohol and oil may be simultaneously injected as a combustible charge into the engine by means of separate pumping devices after the said preliminary heating has been effected for the purpose of accelerating the rapidity of the explosion and of effecting a perfect combustion of the combined charge.

Incidentally our invention includes the provision of separate means for the introduction of the alcohol and the oil either simultaneously or independently and in other features in the construction and arrangement of parts hereinafter described and claimed specifically.

In the accompanying drawing the figure shows a kerosene-oil engine of well-known construction provided with parts essential in carrying out our invention practically.

The letter A represents the kerosene-oil engine generally, B being the ignition-chamber communicating with the piston-cylinder in the usual way. Communicating with this ignition-chamber B is the usual oil-injection

pipe c, connected with the oil-pump C, operated through the medium of the rock-lever D by the cam e on the cam-shaft E, the pump C being connected by a pipe c' with any suitable source of oil-supply.

Entering the ignition-bulb B, preferably at a point opposite the oil-injection pipe c, is an alcohol-pipe f, connected with an alcohol-forcing pump G, which is actuated through the medium of the rock-lever H by the cam i upon the cam-shaft I, the pump G being connected by the pipe f' with a suitable supply of alcohol. Interposed in the pipes c' f' are valves c<sup>2</sup> and f<sup>2</sup>, by which the supply of oil and alcohol may be regulated or shut off.

It is obvious that in carrying out our invention we are not necessarily confined to the identical form and construction of parts shown, since various modifications may be introduced without departing from the spirit and intent of our invention, which consists, essentially, in the provision of means for forcibly injecting by separate pumping devices alcohol and oil into a common ignition or combustion chamber.

The ignition chamber or bulb B is provided with an electric sparking device K or equivalent means for effecting the ignition of the first charges introduced into said chamber.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. In a kerosene-oil engine, the combination with an ignition or combustion chamber, of means for simultaneously introducing into said chamber, jets under pressure, of both oil and alcohol, the injectors being opposed to each other in such manner that the jets of oil and alcohol are caused to impinge against each other in said chamber, substantially in the manner and for the purpose set forth.

2. In a kerosene-oil engine, the combination with the ignition or combustion chamber, of means for simultaneously introducing into said chamber under pressure in different directions oil and alcohol to accelerate the rapidity of the explosion, substantially as described.

ABBOT AUGUSTUS LOW.  
AUGUST WASSMANN.

Witnesses:

FRANK E. ROACH,  
D. W. GARDNER.