No. 762,271 PATENTED JUNE 14, 1904.

J. F. BENNETT & H. S. MOORWOOD.

CARBURETER FOR MOTOR CARS, &c.

APPLICATION FILED MAR. 23, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

Fig.3.

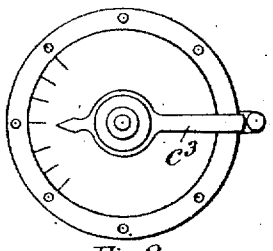
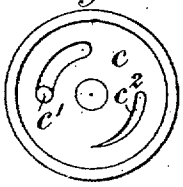


Fig.2.



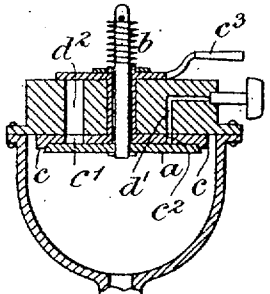
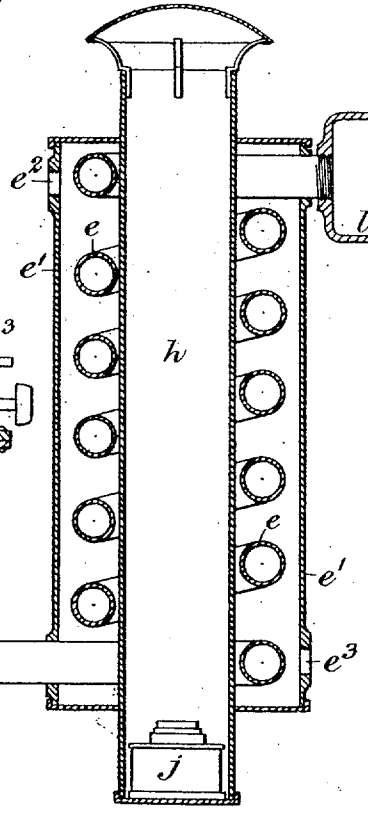


Fig.1.



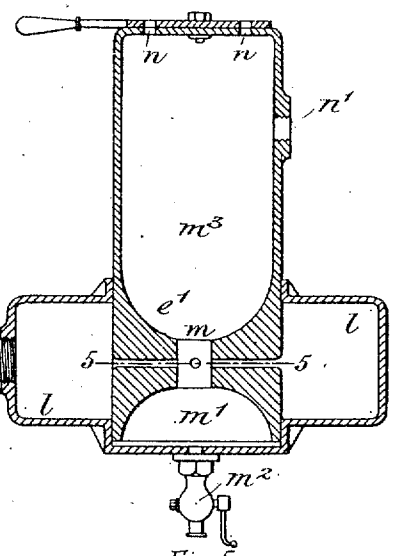
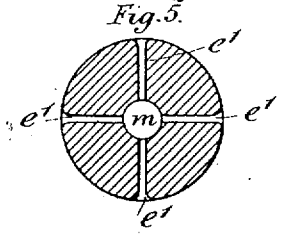


Fig.5.



Witnesses

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E. McFarland

Inventors

James Frederick Bennett &

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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 6.

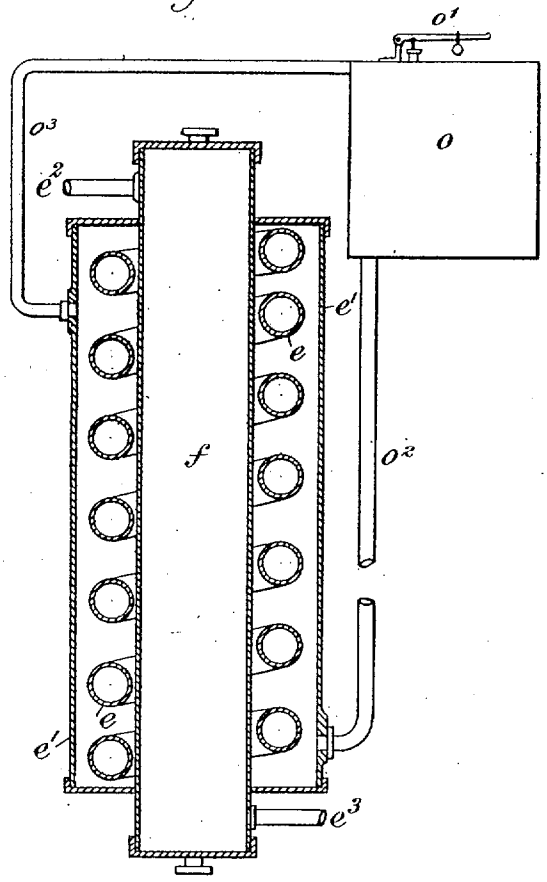
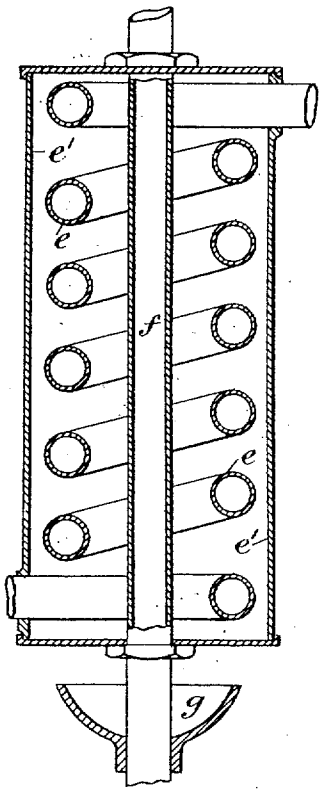


Fig. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

JAMES FREDERICK BENNETT AND HEDLEY STANLEY MOORWOOD, OF SHEFFIELD, ENGLAND.

CARBURETER FOR MOTOR-CARS, &c.

SPECIFICATION forming part of Letters Patent No. 762,271, dated June 14, 1904.

Application filed March 23, 1903. Serial No. 149,162. (No model.)

To all whom it may concern:

Be it known that we, JAMES FREDERICK BENNETT, electrical engineer, residing at 18 Violet Bank, Sheffield, and HEDLEY STANLEY MOORWOOD, engineer, residing at Glenwood, Dore, Sheffield, England, subjects of the King of Great Britain, have invented certain new and useful Improvements in Carbureters for Motor-Cars and other Purposes, of which the following is a specification.

Our invention has for its object a carbureter which will work with light and heavy oils, alcohol, and other forms of volatile liquid.

The apparatus consists of three parts—namely, an automatic feed, a heater, and a mixer which brings the elements into perfect mixture with each other when the air and oil are heated.

Figure 1 is a sectional side elevation of the apparatus. Fig. 2 is a plan of the valve-seat of the feed. Fig. 3 is a plan of the feed. Figs. 4 and 6 are sectional side elevations of modified forms of heater. Fig. 5 is a local section on the line 5 5, Fig. 1.

The automatic feed consists of a valve *a*, worked by the suction of the engine against a spring *b*. The valve-seat *c* (shown separately at Fig. 2) has in it ports $c' c^2$, one or both of these being wider at one end than the other. These ports are in front of the oil and air inlets *d d'*, and by rotating the seat by means of the handle c^3, Figs. 1 and 3, the supply can be regulated.

The heater consists of a coil *e* in a casing e', heated by the exhaust or by hot water from the cylinder-jacket, which may either fill the casing, circulating through openings $e^2 e^3$, Fig. 1, or be led through a pipe *f* in it, as shown at Fig. 6. At the bottom of the casing is a cup *g*, Fig. 4, in which spirit is burned at starting, or the casing may have a flue *h*, Fig. 1, through it, so that it is heated at starting by a lamp *j*. The oil and air pass from the heater to the annular chamber *l* of the mixer and from thence escape by radial jets *l'* into a central pipe *m*, one end of which opens into a chamber *m'*, supplied with air by a cock m^2, while the other end opens into a chamber m^3, to which air may be admitted at the adjustable openings *n* to complete a perfect explosive mixture.

The whole apparatus acts as follows: Air and oil is drawn into the feed and then passes into the heater and is raised to the required temperature. It is then passed on to the mixer and converted into a finely-divided gas. A convenient means of heating is to start the engine with spirit, and when all is hot to turn off the spirit and turn on the paraffin.

It is found in practice that the automatic feed may be placed at the mixer end of coil *e*, in which case the oil does not pass through the heater; but there may be a separate coil for heating the oil, which is heated by heater or other convenient means.

The heat may be adjusted by means of a tank *o*, Fig. 6, containing water or any liquid which boils at the heat required. This may flow into the casing of the heater by gravity or pressure.

When the casing is heated by the exhaust or other source of heat, the vapor of the internal liquid drives it into the tank. Thus the casing is kept at the boiling-point of the liquid.

The tank *o* is a circulating one containing water or other liquid and has a pressure blow-off valve *o'*. The carbureter-jacket also contains the liquid and is connected to the tank by two pipes $o^2 o^3$. Thus when the carbureter becomes heated to a given temperature the liquid is evaporated, producing steam or vapor, thus absorbing the heat and keeping the carbureter at a constant temperature. It will readily be seen that the temperature of the carbureter depends on the weight on the safety-valve. By liberating or compressing same we get a higher or lower temperature.

What we claim is—

1. In a mixer for a carbureter, the combination of a pipe, means for supplying air to one end of the pipe, jets directed inward radially to the pipe, means for supplying vapor to the jets, a vessel connected to the other end of the pipe, and means for supplying further air to the vessel.

2. In a mixer for a carbureter, the combination of a pipe, means for supplying air to

one end of the pipe, an annular chamber surrounding the pipe, passages leading radially inward from the chamber to the pipe, means for supplying vapor to the chamber, a vessel connected to the other end of the pipe, and means for supplying further air to the vessel.

3. In a hydrocarbon feed for a carbureter the combination of a block having in it passages for the supply of air and hydrocarbon, a valve-seat resting on the block and having in it two circular slots one of which is wider at one end than the other, means for rotating the valve-seat about the center of the slots, and a valve resting on the seat.

4. In a hydrocarbon-feed for a carbureter, the combination of a block having in it a central hole and passages for the supply of air and hydrocarbon equidistant from the hole, a sleeve working in the hole, a handle fixed to one end of the sleeve, a valve-seat resting on the block and fixed to the other end of the sleeve and having in it two circular slots one of which is wider at one end than the other, a spindle passing through the sleeve, a spring acting on the spindle, and a valve fixed to the spindle and resting on the seat.

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Witnesses:
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