No. 705,021. Patented July 22, 1902.

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

CARBURETER.

(Application filed Mar. 10, 1902.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

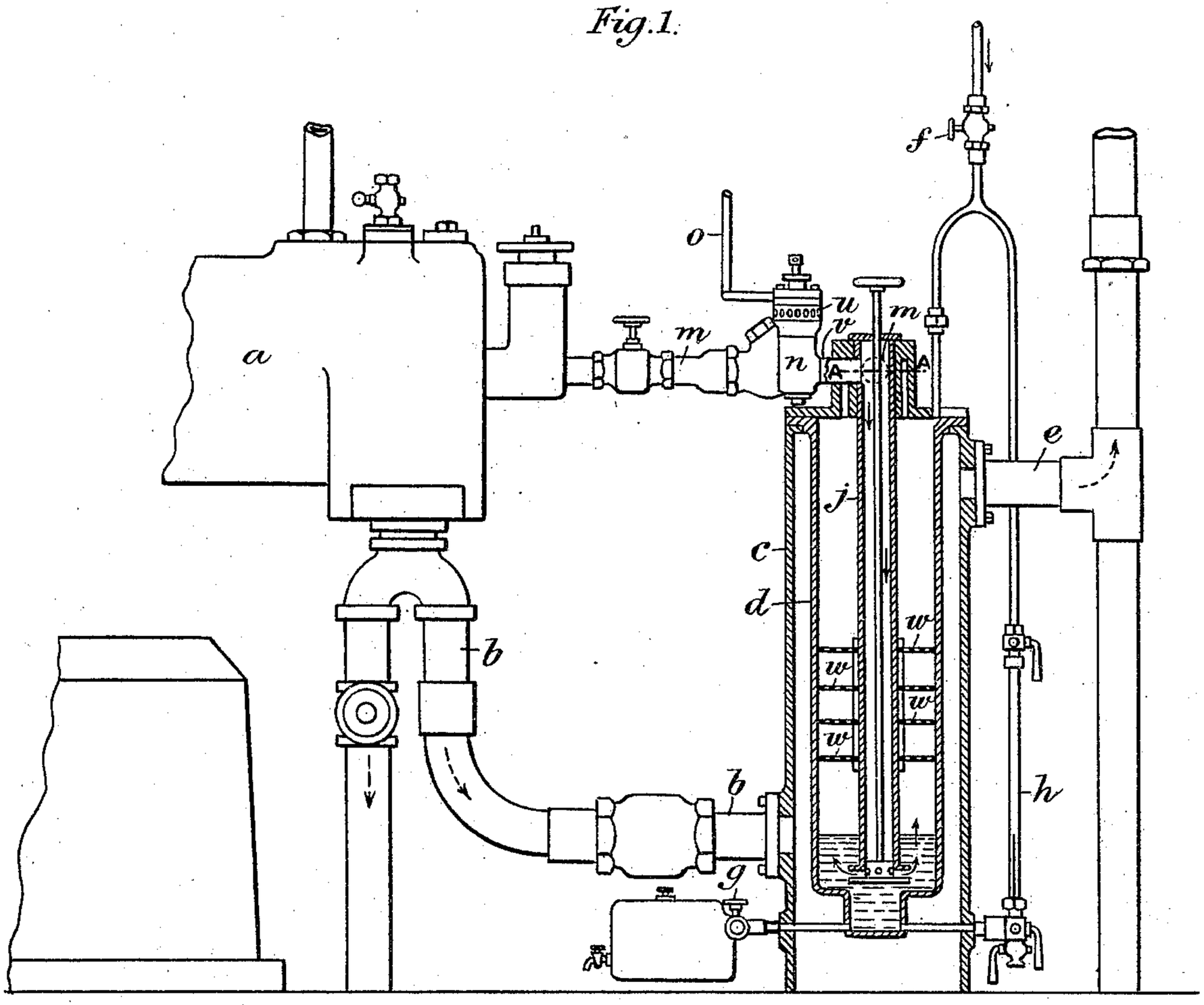
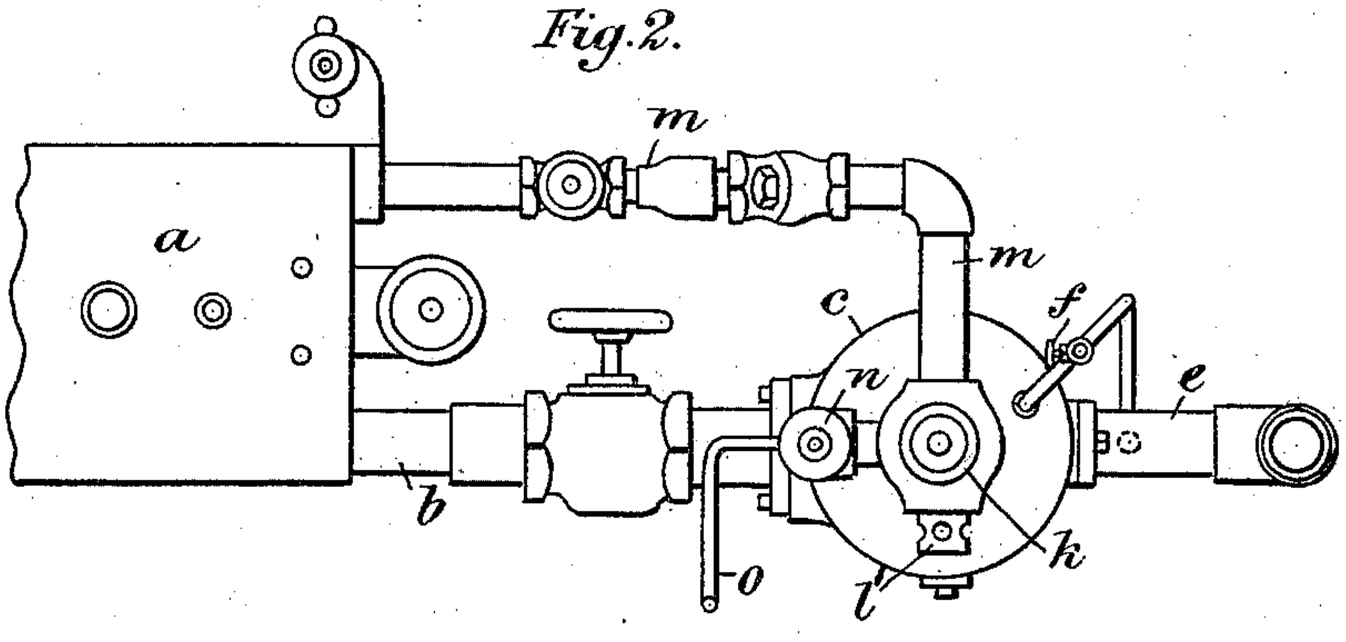


Fig. 2.



Witnesses
A. M. Parkins.
J. A. Macdonald.

Inventors
J. F. Bennett, &
H. S. Moorwood,
By their Attorneys,
Baldwin, Davidson & Wright.

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Fig 4

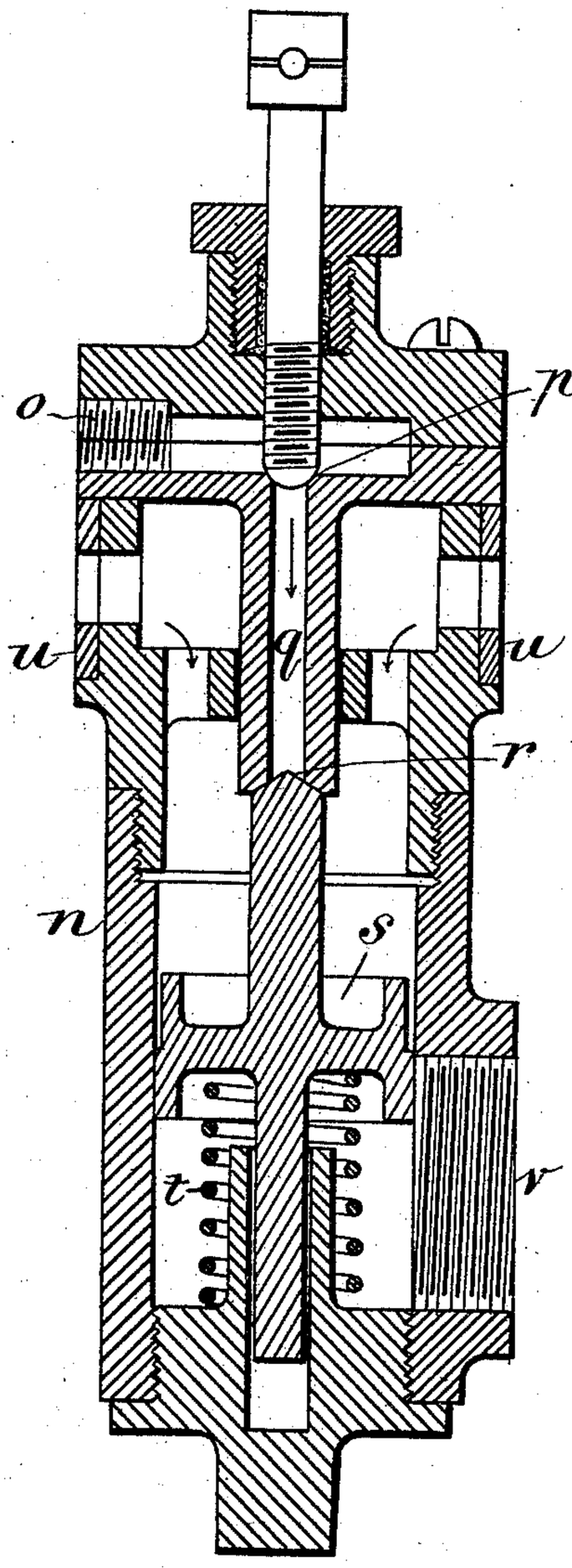
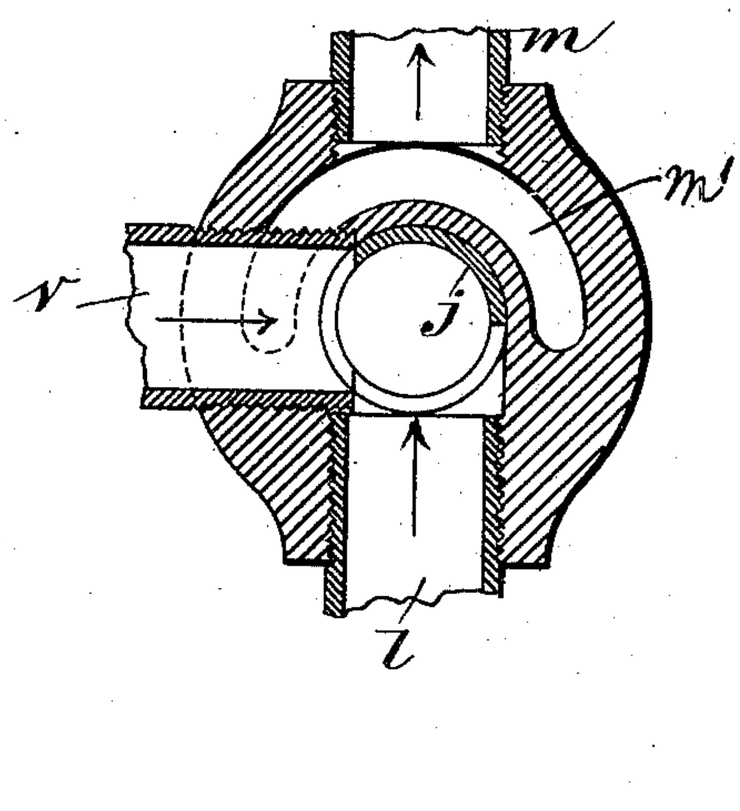


Fig. 3.



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UNITED STATES PATENT OFFICE.

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

CARBURETER.

SPECIFICATION forming part of Letters Patent No. 705,021, dated July 22, 1902.

Application filed March 10, 1902. Serial No. 97,462. (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 a certain new and useful Carbureter, of which the following is a specification.

It has often been proposed to carburet air by blowing or sucking it through heated liquid hydrocarbon, and good results can for a time be obtained by this method; but great precautions have to be taken to prevent part of the air passing without being carbureted, and the hydrocarbon is gradually deprived of its more volatile constituents, so that the product becomes worse and worse. It has also often been proposed to carburet air by continuously injecting small quantities of liquid hydrocarbon into a stream of air; but unless very high temperatures are employed, and this is objectionable, some of the hydrocarbon is liable to pass along with the air in a liquid form, thus giving a very imperfect result. According to this invention these two systems are combined in such a manner as to obtain the advantages without the disadvantages of each. For this purpose liquid hydrocarbon is injected into an air-supply pipe, which delivers the air so carbureted in minute streams beneath the surface of a quantity of heated liquid hydrocarbon. The air being thus brought into intimate contact with the mass of hot liquid is completely carbureted, but, nevertheless, is prevented from carrying on any drops with it, while the mass of liquid, being constantly replenished, does not become exhausted of its more volatile constituents. The result, therefore, is a vapor of constant quality and free from liquid in suspension.

The drawings show the application of the invention to an oil-gas engine; but it will be understood that it can be employed for the production of carbureted air for any purpose.

Figure 1 is a side elevation showing the carbureter in section, and Fig. 2 is a plan. Fig. 3 is an enlarged section on the line A A, Fig. 1. Fig. 4 is a vertical section of the oil-supply on an enlarged scale.

a is the engine, and *b* is the exhaust-pipe, which leads the hot products of combustion into the annular space between the casings *c* and *d*, which form the carbureter, and *e* is the escape-pipe from this space. The proportion of the exhaust passed through the carbureter is regulated by a valve which may be operated by a thermostat, so as to keep the temperature constant.

f and *g* are cocks by which fresh hydrocarbon is supplied to and dirty hydrocarbon and refuse are drawn off from the vessel *d*, and *h* is a gage showing the height of liquid in it.

j is an air-pipe dipping into the liquid in the vessel *d*, the air escaping through holes in it between two disks, whose distance apart can be adjusted by the hand-wheel *k*. The air is admitted to the pipe *j* by a pipe *l*, Fig. 3, perforated with holes and covered with a cap *l'*, Fig. 2, similarly perforated, by turning which the supply can be adjusted. The carbureted air passes to the engine by the pipe *m*, leading from the semicircular channel *m'*, which communicates with the vessel *d*.

n is the oil-supply apparatus, shown in vertical section on a larger scale in Fig. 4.

o is a pipe supplying hydrocarbon past the screw regulating-valve *p* to the pipe *q*, whose lower end is closed by the valve *r*, carried by the piston *s*, the latter being pressed upward by the spring *t*. Air also is admitted by holes, whose size is regulated by the perforated sliding collar *u*. The upper half of the piston *s* is of less diameter than the lower half, so that when the piston is drawn down the air and hydrocarbon can pass into the pipe *v*, connecting the lower end of the casing to the top of the air-pipe *j* of the carbureter. The suction of the engine when taking its charge draws the piston *s* and valve *r* downward, and air, with a little hydrocarbon, passes by the pipe *v* into the pipe *j*, where they meet a further supply of air, sucked in through the holes *l*, and the whole passes together down the pipe *j* and escapes at the bottom in fine jets into the hydrocarbon in the vessel *d*, and rising up passes through the perforated diaphragms *w* and pipe *m* to the engine *a*.

What we claim is—

1. The combination of a valve, a spring tending to close the valve, an oil-supply pipe leading to the valve, a reservoir for liquid hydrocarbon, a pipe connecting the valve and reservoir, means for admitting air into the pipe, and means for exhausting air and vapor from the reservoir.

2. The combination of a cylinder, means for admitting air to the cylinder, a piston in the cylinder, an oil-supply pipe leading into the cylinder, a valve on the piston controlling the oil-supply, a spring acting on the piston and tending to close the oil-supply, a pipe leading from the cylinder, means for admitting air into the pipe, a reservoir for liquid hydrocarbon into which the pipe dips and means for exhausting air and vapor from the reservoir.

JAMES FREDERICK BENNETT.
HEDLEY STANLEY MOORWOOD.

Witnesses:
JAS. A. NOWLIN,
GEO. OUTRAM.