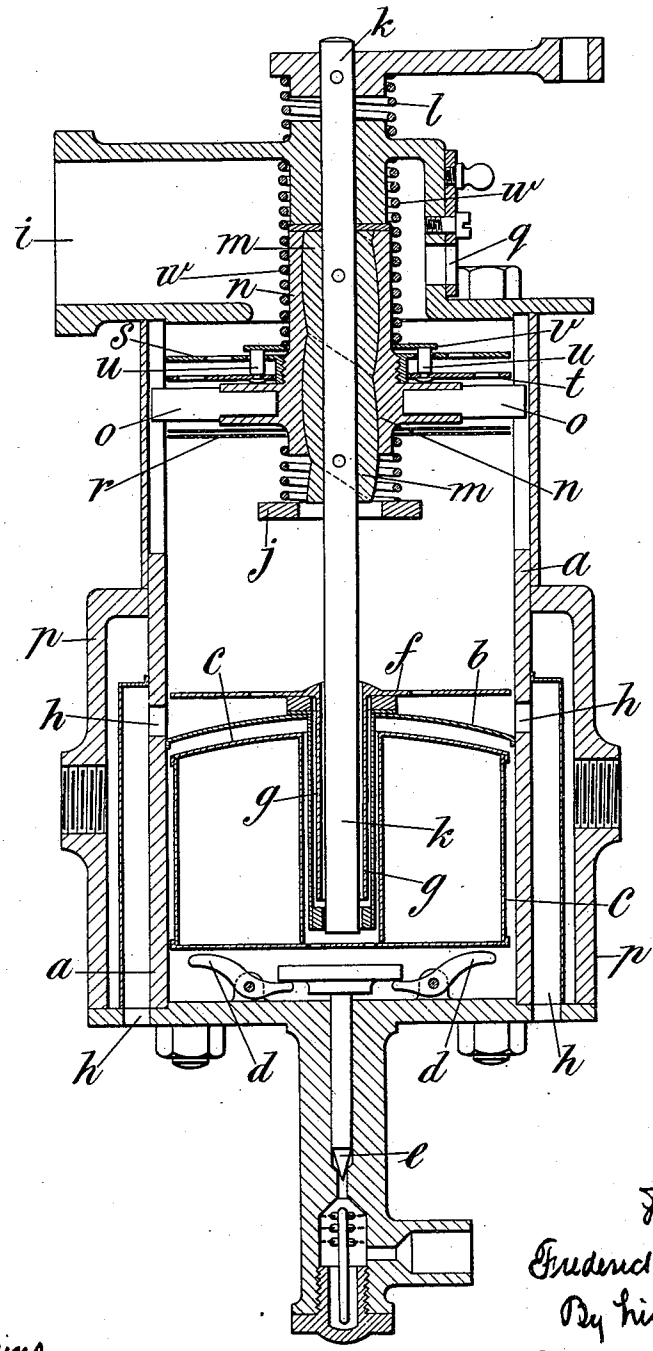
No. 742,920. PATENTED NOV. 3, 1903.

F. H. SMITH.

CARBURETER FOR EXPLOSION ENGINES.

APPLICATION FILED APR. 10, 1903.

NO MODEL.



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No. 742,920. Patented November 3, 1903.

UNITED STATES PATENT OFFICE.

FREDERICK HUGH SMITH, OF DATCHET, NEAR WINDSOR, ENGLAND.

CARBURETER FOR EXPLOSION-ENGINES.

SPECIFICATION forming part of Letters Patent No. 742,920, dated November 3, 1903.

Application filed April 10, 1903. Serial No. 152,044. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK HUGH SMITH, engineer, a subject of the King of Great Britain, residing at Manor House, Datchet, near Windsor, England, have invented certain new and useful Improvements in Carbureters for Explosion-Engines, of which the following is a specification.

According to this invention a certain length (preferably adjustable) of a reciprocating rod which dips into the liquid hydrocarbon is exposed to the current of incoming air, and the film of liquid upon it is vaporized. Since the thickness of the film of liquid brought up on the rod at each reciprocation is substantially constant, the supply of vapor is extremely regular and can be readily varied by altering the length of the wetted surface of the rod exposed at each reciprocation. The arrangement I prefer to adopt is shown in vertical section in the drawing.

The carbureter consists of a vertical cylindrical vessel *a*, divided into two chambers by a transverse diaphragm *b*. The lower chamber has in it an annular float *c*, working on a tubular guide fixed to the diaphragm *b*. This float acts on the levers *d* and regulates the admission of liquid through the valve *e* and keeps its surface at a constant level in the ordinary manner. The upper chamber has in it a perforated disk *f*, having fixed to its under side a sleeve *g*, which passes through the diaphragm *b* and descends into the axial hole of the float dipping into the liquid. Since this hole is central, the height of the liquid in it is practically constant in spite of any tilting of the apparatus. Air is sucked by the engine through the inlets *h* into the upper chamber beneath the disk *f*, which is thereby raised, drawing the wetted sleeve *g* into the upper chamber and exposing it to the blast of air. The mixture of air and vapor passes to the engine through the pipe *i*. Above the disk is an adjustable spring-buffer *j*, which not only determines the length of wetted surface exposed, but also by suddenly arresting the disk tends to jerk the liquid off the sleeve into the current of air.

The sleeve *g* works on a central rod *k*, which can be depressed against the spring *l* to push the float downward onto the levers *d*, working the liquid-admission valve *e* to insure its being open at starting.

The rod *k* has fixed to it a quick-threaded screw *m*, working in the nut *n*, which carries the buffer *j*, so that by turning the rod the buffer is raised and lowered, the nut *n* being prevented from turning by pins *o*, which engage with slots in the walls of the vessel *a*.

The vessel *a* is surrounded by a jacket *p*, heated by the products of combustion, and the air-supply pipes *h* to the upper chamber are led through this jacket. Further, air can be added to the mixture by the valve *q*.

r is wire-gauze to prevent the flame from the engine passing back into the carbureter and to break up any liquid petrol.

The rod *k* may be turned by the engine-governor in any convenient manner to regulate the speed of the engine by varying the supply of hydrocarbon; but I generally dispense with the ordinary governor, making the engine self-governing, as hereinafter described, the rod *k* being in this case turned by hand only for the purpose of altering the speed at which the engine is set to run.

The engine is made self-governing for any speed at which it is set to run by a peculiar form of valve. This valve consists of a pair of disks *s* and *t*, perforated with holes, which are not in similar positions in the two disks, so that the nearer the disks are together the more is the passage of gas past them impeded, while when they are pressed into contact with each other the passage is completely stopped. The upper disk *s* is fixed to the nut *n*, while the disk *t* is loose upon it and has studs *u* fixed to it, which pass through holes in the disk *s* and are pressed downward by the washer *v*, which is acted on by the spring *w*. The faster the engine runs the greater its suction and therefore the more it tends to raise the disk *t* against the spring *w*, and thus diminish the supply of the inflammable mixture. It is to be observed that since the disk *s* is fixed to the nut *n* when the rod *k* is turned and the nut *n* is lowered to diminish the supply of hydrocarbon, as above described, the spring *w* is weakened and the suction of the engine therefore more easily cuts off the supply of the inflammable mixture, so that diminishing the supply of hydrocarbon has the effect of setting the self-governing arrangement to make the engine run at a slower speed.

What I claim is—

1. In a carbureter the combination of a vessel, means for keeping the lower part of the vessel filled with liquid hydrocarbon, a rod adapted to dip into the hydrocarbon in the vessel, means for reciprocating the rod, and means for producing a current of air past the rod.

2. In a carbureter the combination of a vessel having vertical sides, means for keeping the lower part of the vessel filled with liquid hydrocarbon, a horizontal disk loosely fitting the vessel, a rod adapted to dip into the hydrocarbon projecting downward from the under side of the disk and means for admitting air to the vessel beneath the disk.

3. In a carbureter the combination of a vessel having vertical sides, a float in the vessel having a central vertical tube through it, means operated by the float for admitting liquid hydrocarbon into the vessel, a horizontal disk loosely fitting the vessel above the float, a rod adapted to dip into the hydrocarbon projecting downward from the under side of the disk and entering the tube and means for admitting air to the vessel beneath the disk.

4. In a carbureter the combination of a vertical cylindrical vessel, an annular diaphragm dividing the vessel into two, an annular float in the vessel below the diaphragm, means operated by the float for admitting liquid hydrocarbon into the vessel, an annular disk in the vessel above the diaphragm, a central tube adapted to dip into the hydrocarbon projecting downward from the under side of the disk through the diaphragm into the float, a central rod passing down through the tube and serving as a guide for it, an air-inlet to the vessel situated beneath the disk and above the diaphragm and a valve operated by the float for admitting hydrocarbon to the vessel.

5. In a carbureter the combination of a vessel having vertical sides, means for keeping the lower part of the vessel filled with liquid hydrocarbon, a horizontal disk loosely fitting the vessel, a rod adapted to dip into the hydrocarbon projecting downward from the under side of the disk, means for admitting air to the vessel beneath the disk and an adjustable buffer above the disk.

6. In a carbureter the combination of a vessel having vertical sides, a float in the vessel having a central vertical tube through it, means operated by the float for admitting liquid hydrocarbon into the vessel, a horizontal disk loosely fitting the vessel above the float, a rod adapted to dip into the hydrocarbon projecting downward from the under side of the disk and entering the tube, means for admitting air to the vessel beneath the disk, and an adjustable buffer above the disk.

7. In a carbureter the combination of a vertical cylindrical vessel, an annular diaphragm dividing the vessel into two, an annular float in the vessel below the diaphragm, means operated by the float for admitting liquid hydrocarbon into the vessel, an annular disk in the vessel above the diaphragm, a central tube adapted to dip into the hydrocarbon projecting downward from the under side of the disk through the diaphragm into the float, a central rod passing down through the tube, an air-inlet to the vessel situated beneath the disk and above the diaphragm, a valve operated by the float for admitting hydrocarbon to the vessel, and an adjustable buffer above the disk.

8. The combination of a vessel, means for supplying carbureted air to the vessel, a pipe connecting the vessel to the engine, a pair of disks in the vessel having holes through them in dissimilar positions and a spring tending to force the disks apart.

9. The combination of a vessel, means for supplying carbureted air to the vessel, a pipe connecting the vessel to the engine, a central rod in the vessel, a screw on the rod, a nut on the screw, a pair of disks having holes through them in dissimilar positions one disk being fixed to the nut and the other being loose upon it and a spring tending to force the disks apart.

10. In a carbureter the combination of a vessel having vertical sides, a float in the vessel having a central vertical tube through it, means operated by the float for admitting liquid hydrocarbon into the vessel, a horizontal disk loosely fitting the vessel above the float, a rod adapted to dip into the hydrocarbon projecting downward from the under side of the disk and entering the tube, means for admitting air to the vessel beneath the disk, an adjustable buffer above the disk, a pipe connecting the top of the vessel to the engine, a pair of disks in the vessel above the buffer having holes through them in dissimilar positions and a spring tending to force the disks apart.

11. In a carbureter the combination of a vertical cylindrical vessel, an annular diaphragm dividing the vessel into two, an annular float in the vessel below the diaphragm, an annular disk in the vessel above the diaphragm, a central tube projecting downward from the under side of the disk through the diaphragm into the float, a central rod passing down through the tube and serving as a guide for it, an air-inlet to the vessel situated beneath the disk and above the diaphragm, a valve operated by the float for admitting hydrocarbon to the vessel, a buffer fixed to the rod above the disk, a pipe connecting the top of the vessel to the engine, a screw on the rod, a nut on the screw, a pair of disks having holes through them in dissimilar positions one disk being fixed to the nut and the other being loose upon it and a spring tending to force the disks apart.

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