N° 12,930 A.D. 1914

Date of Application, 26th May, 1914—Accepted, 15th May, 1915

COMPLETE SPECIFICATION.

Improvements in Carburettors of the "Internal Combustion Engine" Type.

I, Ernest Robert Godward, of No. 40, Dowling Street, Dunedin, in the Dominion of New Zealand, Cycle Manufacturer, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to carburettor apparatus used for carburetting air to produce fuel for internal combustion engines.

In carburettors of the type most frequently used, the liquid fuel was introduced into the combustion chamber from a point in close proximity thereto and in quantities in excess of that required to carburet the air with the result that a certain amount of raw fuel passed through the combustion chamber without utilization and was consequently wasted.

It is the object of the present invention to provide improved apparatus whereby this disadvantage is overcome, the liquid fuel being atomized and mixed with air, and the mixed air and atomized fuel being then passed through a length of absorbent material whereby the liquid fuel which is not absorbed by the air is collected by the absorbent material and is retained thereby until sufficient air passes through the absorbent material to absorb the excess of fuel. In this way the lighter and more volatile hydrocarbons are held in suspension by the air assisted by the partial vacuum resulting from the suction stroke of the engine, while the heavier and less volatile hydrocarbons are caught by the absorbent material and gradually supplied to the air passing through the apparatus. The results are that a more uniformly carburetted air is supplied which may be used advantageously for internal combustion engines, illuminating and other purposes, and waste of fuel is avoided.

Thus, provision is made of an apparatus whereby a uniform mixture is obtained which is free from excess fuel. It is well known that petrol comprises numerous particles having different degrees of volatility, and when fed to a system of the class described, the lighter and more volatile hydrocarbons will be absorbed by the air introduced at the inlet end and induced to travel through the compartments containing the absorbent material by the vacuum produced by the induction stroke of the engine. As air will only absorb a certain quantity of petrol in the process of forming the mixture and the supply of petrol is greater than the air can absorb, the heavier or less volatile hydrocarbons are caught by the absorbent material in the system and prevented from flowing to the cylinder or engine in liquid form, as the lining is longer than is necessary to absorb the lesser volatile hydrocarbons, the outlet end of the lining remaining dry, that is to say, free from petrol, and consequently the mixture will be uniform and more homogeneous in passing from the chamber, it being obvious that after the heavier hydrocarbons have been absorbed by the lining, the mixture must pass the end of the lining which is substantially free from hydrocarbon in liquid form.

In the drawings:—

Figure 1 is an elevation of the apparatus.

[Price 6d.]

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Figure 2 is an elevation showing the opposite side of the apparatus to that illustrated in Figure 1.

Figure 3 is a sectional elevation of the tank and mixture container.

Figure 4 is a cross section through A—B, Figure 3.

Figure 5 is a sectional plan along the line C—D, Figure 3.

Figure 6 is an enlarged sectional view of one of the mixture tubes.

Figure 7 is an end section through E—F, Figure 2.

Figure 8 is a detail of the fabric-lined conduits.

A petrol tank (1) of ordinary design is used; having the usual vertical partitions (2) dividing the lubricating oil and the petrol, a horizontal division (3) forming the bottom of the petrol tank, and a cover for the container compartment (4). The compartment (4) is divided longitudinally, preferably with metal partitions a little shorter than the length of the compartment; one end of each alternate partition (4^A) and (4^B) being attached to one end (4^C) of the compartment, and one end (4^D) of the intermediate partition (4^E) is attached to the opposite end (4^F) of the compartment. The spaces between the said partitions are hereinafter termed "conduits".

The container comprises a series of these conduits inserted in the compartment (4) placed side by side; four of the said conduits are shown in Figure 4 numbered (5), (6), (7), and (8). Provision is made to line the conduits with fabric, indicated at (9) made preferably from Turkey towelling, hereinafter called the stocking. The stocking is held expanded in contact with the interior surface of the conduits by any suitable means. One method shown consists of a bar (10) resembling in section the letter X, one length thereof being used for each conduit in the container as indicated in Figures 4, 6, and 8. The X shaped bars are inserted within the stocking thus keeping the corners (10^B), (10^C), (10^D) and (10^E) in contact with the stocking and retaining it in a semi-stretched condition against the interior surface of the metal conduits. A method of constructing the stocking is shown in Figure 8, (the view being broken at (G) and (H) to show the X shaped bars (10)), two fabric lined conduits being placed side by side; (9^A) represents a portion of the stocking (9) joining the two fabric lined conduits together; three of these portions (9^A) would be required when there are four fabric lined conduits as illustrated in Figure 5. The portions (9^A) may have short X shaped sections to maintain them normally stretched if desired. The inlet to the stocking is indicated at (11) Figure 2, the section thereof developing from a square at (12) to a circular shape at the inlet (11) to enable a handy coupling being made with the atomiser (13).

Precautions are taken in the event of an excess of petrol lodging in the container. The outlet pipe (4^G) is produced to within the container as indicated in Figure 1, and a suitable gauze cap (4^H) is placed over the outlet. Apparatus is fitted between the container outlet (4^G) and the cylinder of the engine, comprising a throttle (34), auxiliary air inlet (35) and a gauze chamber (36). The throttle and air inlet may be controlled in the ordinary way by a Bowden control having the usual levers mounted on the handle bars or in some convenient position. The control connections are indicated at (34^A) and (35^A), Figure 1.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1.) In a carburettor, the combination of a device for atomizing liquid fuel and mixing the same with air, a series of conduits connected to receive such atomized fuel and air and adapted to be connected to the intake of an internal combustion engine, said conduits being arranged side by side, linings of fabric within said conduits, and means to stretch said linings to conform with the sectional shape of said conduits.

2.) In a carburettor, the combination of a device for atomizing liquid fuel and mixing the same with air, a series of connected conduits to receive the

atomized fuel and air from said device and adapted to be connected to the intake of an internal combustion engine, a lining of absorbent fabric contained in each conduit, and connecting pieces of fabric coupling the alternate ends of said fabric linings to form a continuous passage for the fuel from the inlet to the outlet.

Dated this 26th. day of May, 1914.

CARL TEWES,
Civil Engineer,
Agent for Applicant.

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A.D. 1914. May 26. No. 12,930.
GODWARD'S Complete Specification.

(2 SHEETS)

SHEET 1.

FIG. 1

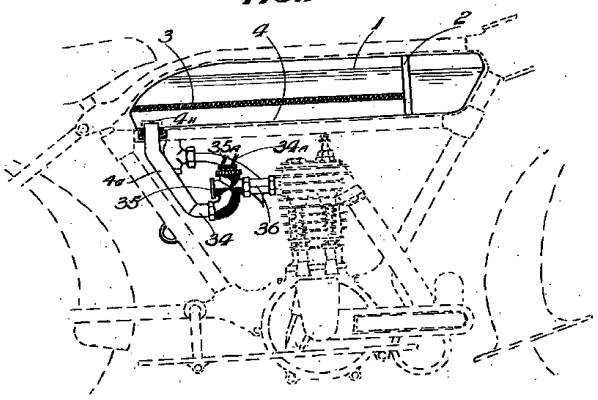
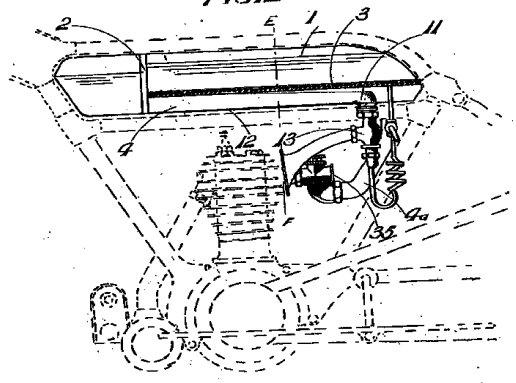


FIG. 2



SHEET 2.

FIG. 3

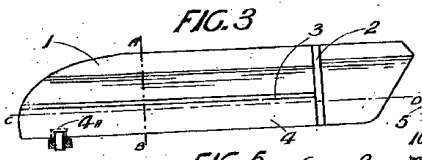


FIG. 4

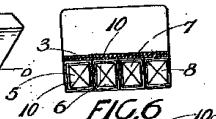


FIG. 5

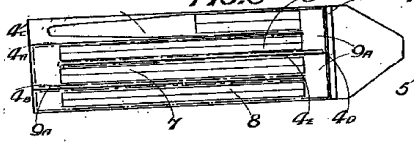


FIG. 6

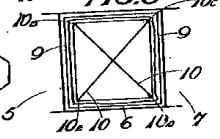


FIG. 7

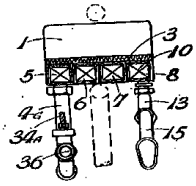
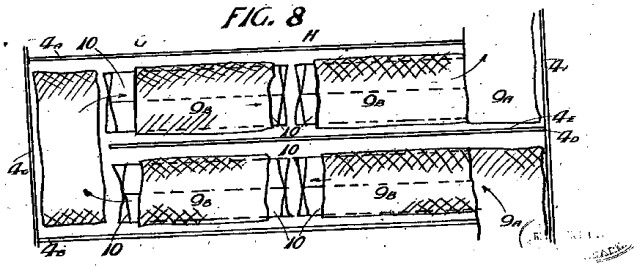


FIG. 8



[This Drawing is a reproduction of the Original on a reduced scale]

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[This Drawing is a reproduction of the Original on a reduced scale.]

FIG. 1

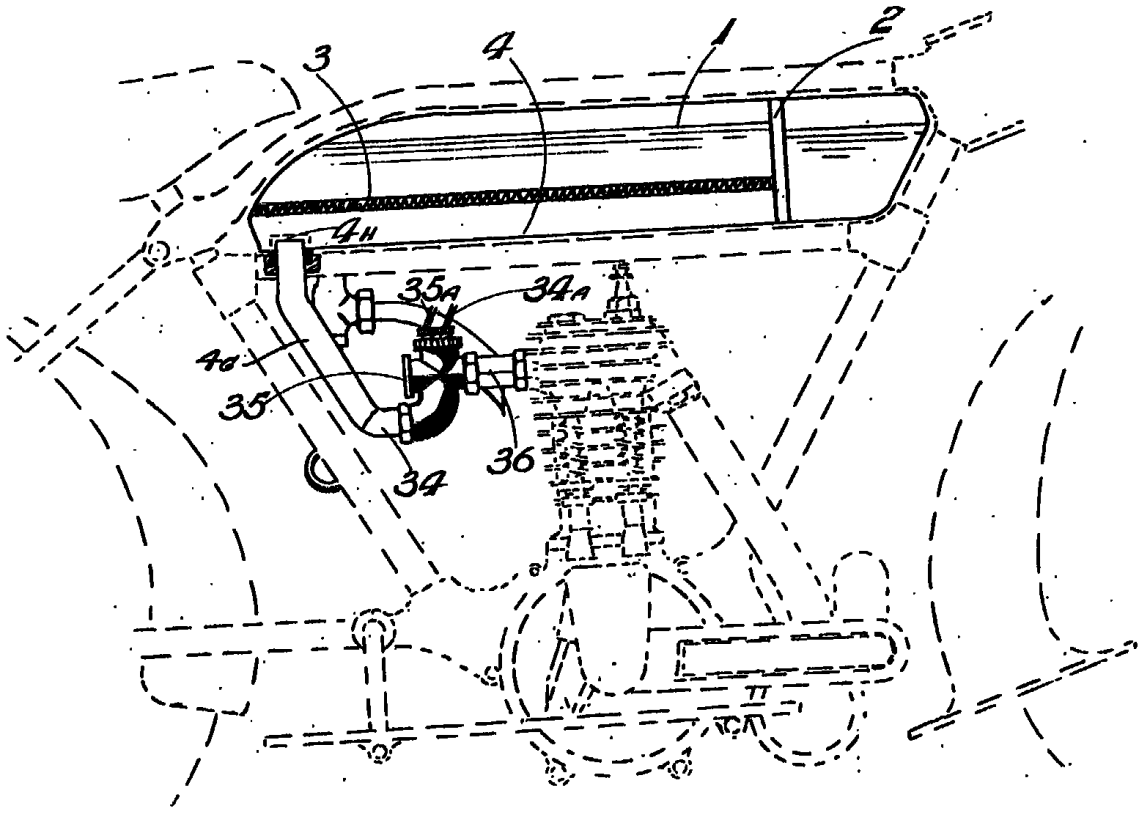


FIG. 2

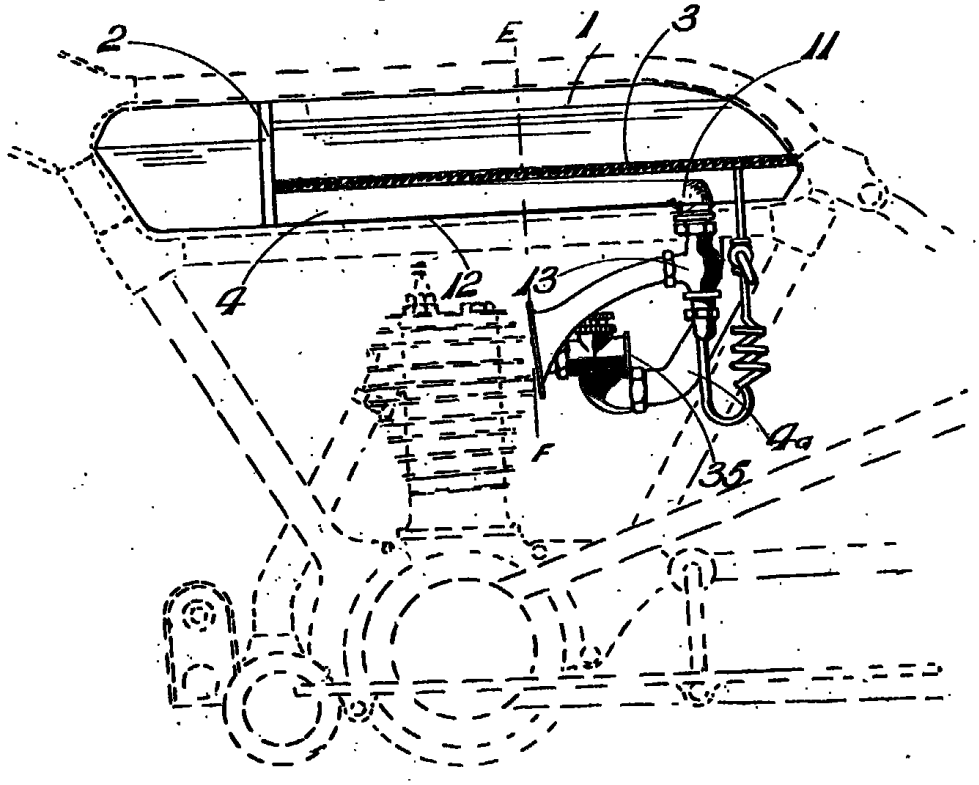


FIG. 3

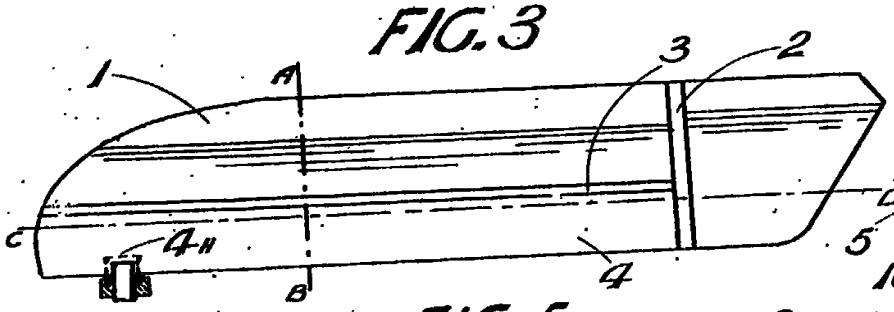


FIG. 4

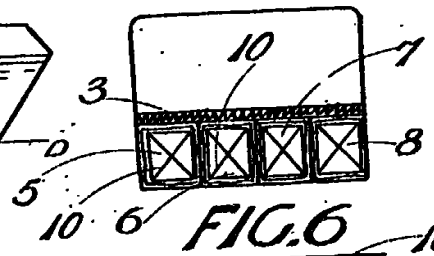


FIG. 5

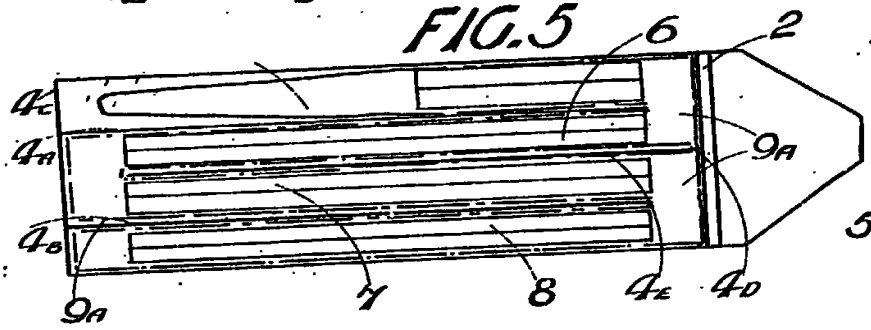


FIG. 6

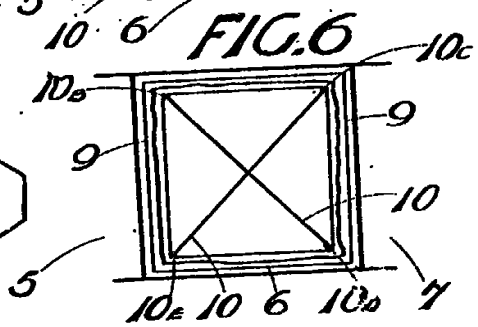


FIG. 7

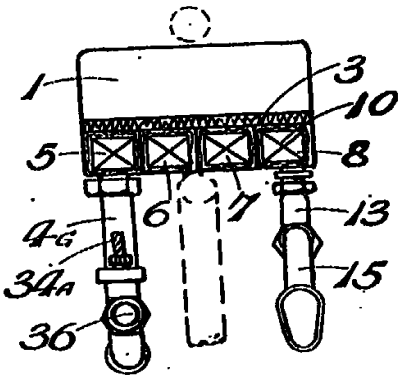
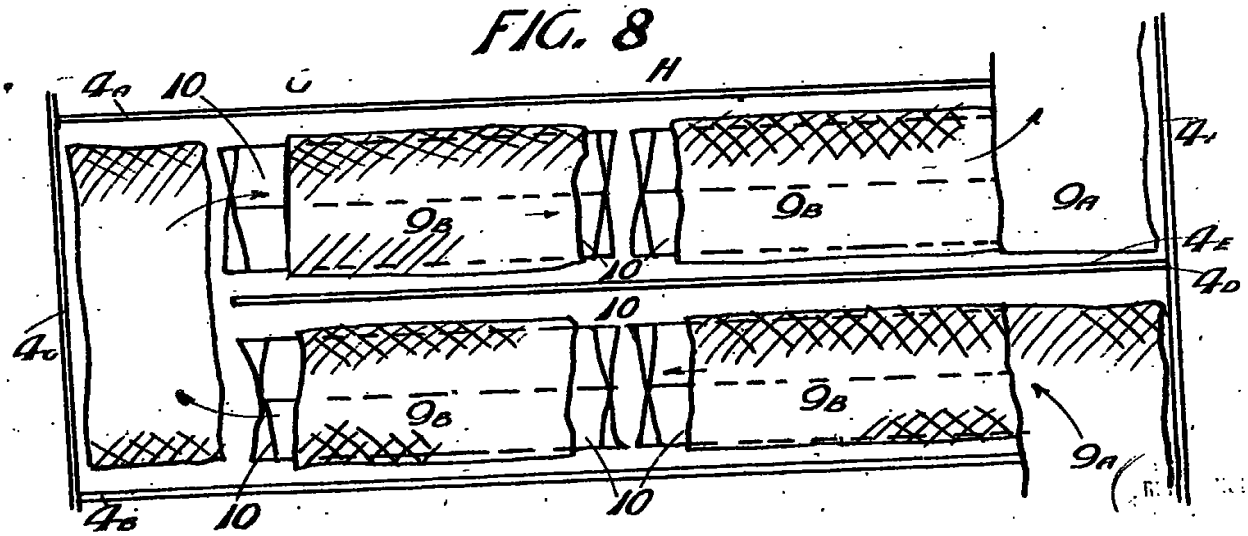


FIG. 8



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