

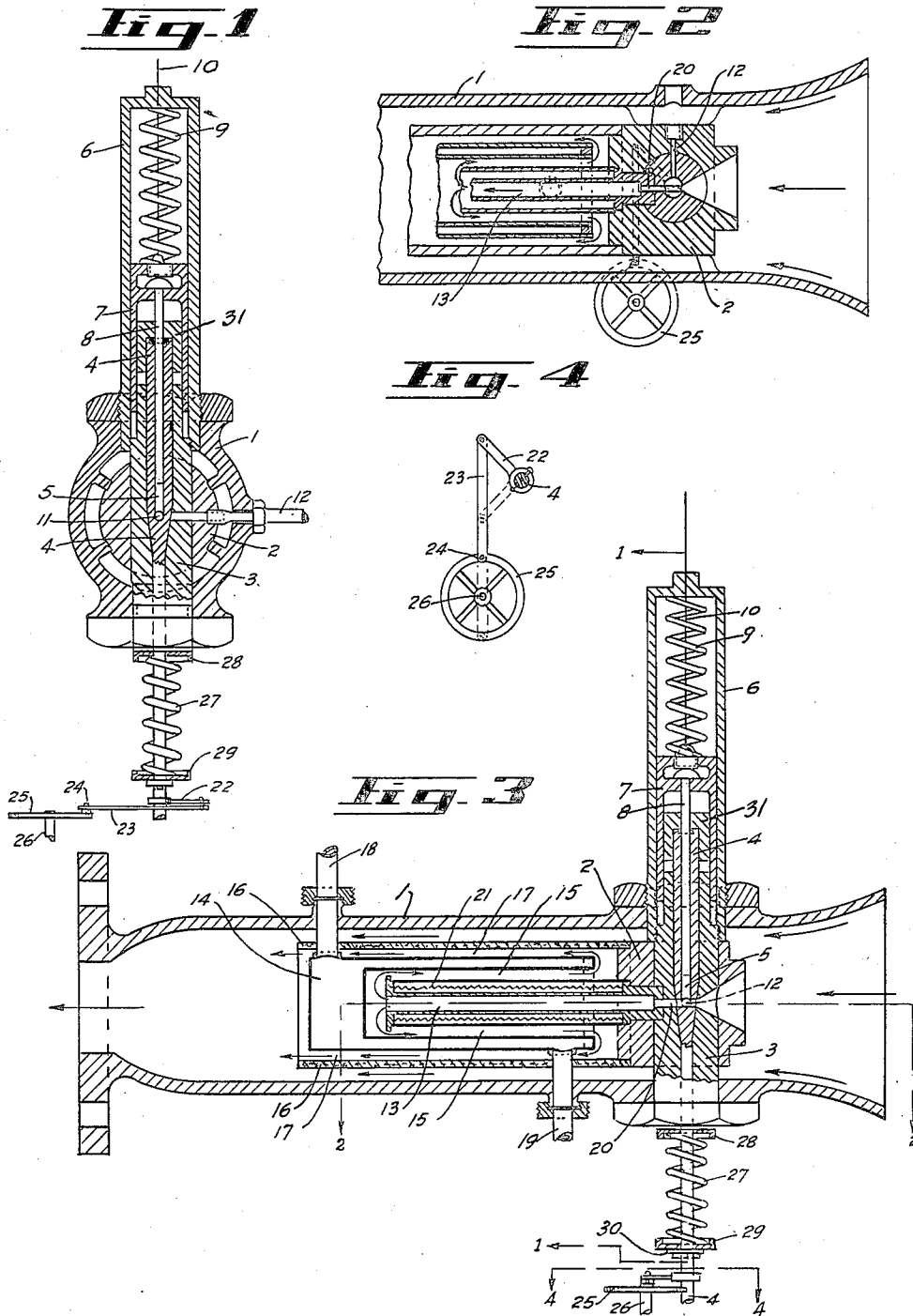
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CARBURETOR

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CARBURETOR

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My invention relates to carburetors for internal combustion engines one of the objects of my invention being to provide a carbureting device for internal combustion engines formed with a primary mixing chamber heated by communication with the exhaust from the engine and communicating with a main air passage to secure thorough vaporization of the fuel before mixing with the main air supply, and further to provide an insulated covering for the primary mixing chamber to avoid heating the main air supply.

A further object of my invention is to provide an improved fuel feed and valve control actuated by movement of the engine eliminating the float as in common use and effecting a marked saving in gasoline or other fuel and further providing comparative safety from explosion.

With the above and other objects in view my invention resides in the combination of parts and elements hereinafter more particularly described and claimed, reference being had to the accompanying drawings wherein like characters of reference indicate like parts throughout the different views and wherein:—

Fig. 1 is a vertical sectional view of my improved carburetor illustrated as taken on a line 1—1 of Fig. 3.

Fig. 2 is a longitudinal sectional view illustrated as taken on a line 2—2 of Fig. 3.

Fig. 3 is a side view in elevation of the device partly in section.

Fig. 4 is a detail view of the valve operating connection.

Having reference to the accompanying drawing the device consists of an outer casing 1 forming a main air passage and communicating with the intake manifold of an internal combustion engine. Transversely disposed in the casing 1 is a block 2 carrying a cylindrical sleeve 3 within which is rotatably mounted a valve 4, the said casing being flanged above and below to permit of securely mounting the working parts. The valve 4 is centrally longitudinally bored to form a fuel chamber 5 in communication as hereinafter described with a source of fuel

supply. Threadably secured in the upper flanged portion of the casing 1 is a cylinder 6 having slidable therein an inner cylinder 7 carrying a headed stem 8 which is disposed in the bore of the valve 4 and maintained normally positioned to limit the chamber 5 to the desired size. Interposed between the inner cylinder 7 and the upper end of the outer cylinder 6 is a spring 9 adjusted to maintain the stem 8 normally depressed. To the head of the stem 8 attaches a cable 10 which extends through an opening provided in the end of the outer cylinder 6 and is carried into a convenient position to be manipulated by the operator to temporarily raise the stem 8 and increase the capacity of the fuel chamber 5 for priming purposes.

Intermediately formed in the valve 4 is a transverse opening or port 11 which communicates with the fuel chamber 5. To the sleeve 3 connects an inlet fuel supply pipe 12 which horizontally aligns with the opening 11 so that by turning the valve 4 and aligning the opening 11 and supply pipe 12 fuel can be admitted to the chamber 5.

In the casing 1 carried by the block 2 is an inner primary mixing chamber 13 open at the outer end. Partially enclosing the chamber 13 is a heating jacket 14 which is spaced therefrom to leave an intervening passageway 15. Enclosing the heating jacket 14 is a casing 16 of insulating material to maintain the heat therein and minimize heating of the outer air in its passage through the main casing. The casing 16 is spaced from the jacket 14 to leave a further intervening passage 17 to form a continuous passageway from the primary mixing chamber to the main air chamber formed by the casing 1. An inlet pipe 18 connects from the engine exhaust to the jacket 14, an outlet pipe 19 being provided to carry away the waste gases passing through the heating jacket.

Through the cylinder 3 and block 2 extends an air passage 20 which communicates at one end by a funnel shaped opening in the block 2 with the main air passage and at the other end with the primary mixing chamber. The said passage 20 aligns with the

opening 11 in the valve 4 so that when the said valve is turned and the opening aligned with the air passage, air can be passed through the mixing chamber.

5 To permit of heating the primary mixture prior to starting the engine electric heating elements 21 are provided which connect with the battery and permit a temporary heating of the chamber.

10 The lower extremity or stem of the valve 4 extends beyond the casing 1 and has secured thereto a lever 22 connected through a pitman rod 23 on a crank pin 24 to a wheel 25 mounted on a shaft 26 and operatively
15 connected to the crank shaft of the engine. Any such mechanism of a similar nature could be used for the purpose producing an alternating 90° movement of the valve 4 to present the opening 11 in succession in alignment with the fuel inlet pipe 12 and the air
20 passage 20.

On the lower portion of the valve 4 is a spring 27 engaged at the inner end by a disc 28 bearing against the lower flanged
25 projection on the casing 1 and at the other end by a disc 29 retained by a collar 30 secured by a set screw to the projection of the valve 4 the said spring being adjusted to maintain the said valve seated in the sleeve
30 3.

To prevent leakage of the fuel through the valve 4 a packing gland as indicated at 31 is provided.

In the operation of the device with the
35 opening 11 aligned with the air passage 20, air drawn through the main air passage by the suction of the piston in the engine is partially diverted through the passage 20 carrying fuel with it from the chamber 5
40 into the primary mixing chamber where it is vaporized and emitted by way of the intervening passageways 15 and 17 into the main air passage to be mixed with the cool air, securing an efficient mixture for combustion purposes. When the mixture has
45 been drawn into the engine, through operation of the wheel 25 by the engine mechanism the valve 4 is rotated closing the air passage 20 and aligning the opening 11 with the fuel inlet to recharge the fuel chamber 5 ready for the next succeeding suction stroke when the opening 11 would be re-aligned with the air passage 20 and a fresh charge carried through.

55 Preheating of the primary mixture is secured by the use of the electric heating elements use of which would be discontinued when heat from the exhaust became available. The protection of the heating jacket and enclosed chamber by an insulated covering is of particular value to insure obtaining
60 a mixture at as low a temperature as possible in order to obtain maximum power and at the same time have a thorough vaporization of the fuel.

During explosion of the mixture the fuel chamber being exhausted the valve 4 effectively eliminates any danger from combustion in the carburetor.

Having thus described my invention what I claim is:—

1. A carburetor for internal combustion engines comprising a casing forming a main air passage, a block centrally disposed in said passage, a cylinder carried by said casing, a sleeve in said cylinder transversely disposed in said block, a rotary valve in said sleeve longitudinally bored and formed with a transverse opening, a stem disposed in said valve normally adjusted to leave a fuel chamber therein communicating with the transverse opening, a spring maintaining said stem in normal adjusted position, a cable connected to said stem for its manipulation, a primary mixing chamber in the air passage, an auxiliary air passage through said sleeve and block communicating with the primary mixing chamber by way of the opening through the valve, a fuel inlet pipe communicating with said sleeve and means for rotation of the valve to alternately register the opening in said valve with the auxiliary air passage and fuel inlet pipe.

2. A carburetor comprising a casing having an air inlet and a mixture outlet, a block adapted to bridge the inlet end of the casing, a cylindrical sleeve transversely disposed in the block, said block and sleeve being provided with an air passage, a valve rotatable in the sleeve, said valve having an axial bore and a transverse opening communicating therewith, a stem in the bore of said valve adjusted to leave a fuel chamber of predetermined capacity therein, a fuel inlet pipe radially disposed in the block and having communication through said sleeve with said fuel chamber, and means for rotating the valve to alternately register the opening therein with the fuel inlet pipe and air passage through the sleeve and block.

3. A carburetor for internal combustion engines comprising a main casing having an air inlet and a mixture outlet, a primary mixing chamber disposed in the casing, heating elements for said primary mixing chamber disposed to leave an outlet therefrom, an insulated casing for said heating elements, a block adapted to bridge the inlet end of the main casing, said block having an air passage therethrough communicating with the primary mixing chamber, a rotary valve in the block, said valve having a fuel chamber formed therein, and said block having a fuel inlet, and means for the operation of said valve to alternately receive fuel from the fuel inlet into the fuel chamber and discharge such fuel into the air passage.

4. A carburetor including concentrically mounted annular passages having air inlets and a mixture outlet, the inner of said pas-

sages having a primary mixing chamber located for travel of the air therethrough from the inlet to said passage, a jacket partially surrounding the primary mixing chamber
5 spaced therefrom and from the wall of the inner annular air passage to leave a circuitous outlet from the primary mixing chamber to said inner passage, means for supplying fuel to the primary mixing chamber and means
10 for heating said jacket.

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