May 21, 1929. J. S. BRONCATO 1,714,156

CARBURETOR

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Fig. 1.

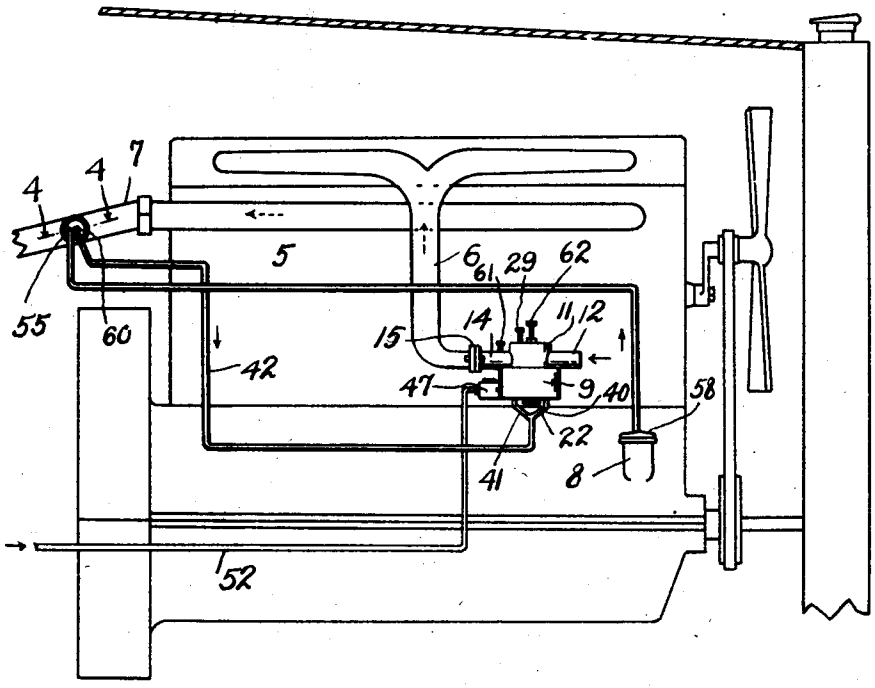
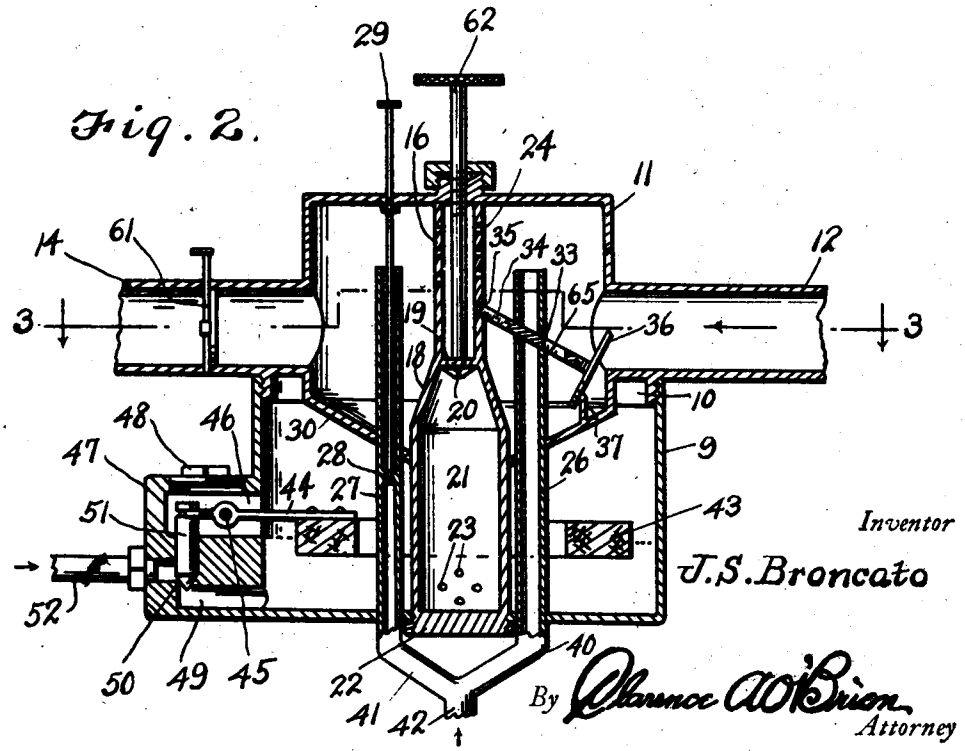


Fig. 2.



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Fig. 3.

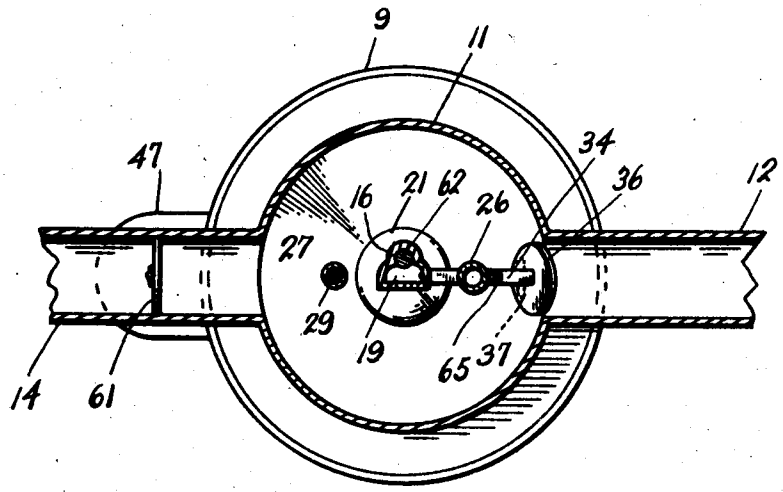
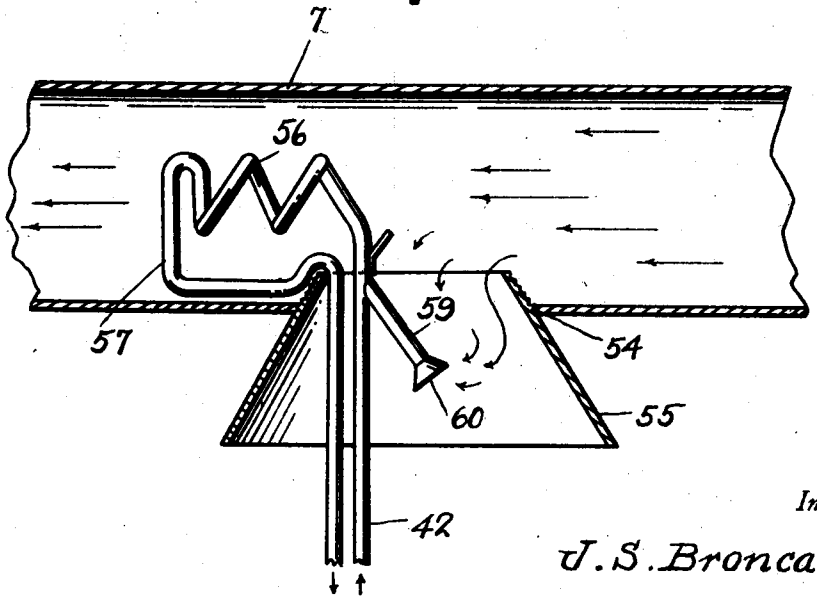


Fig. 4.



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Patented May 21, 1929. 1,714,156

UNITED STATES PATENT OFFICE.

JACK SAMUEL BRONCATO, OF ST. BONAVENTURE, NEW YORK.

CARBURETOR.

Application filed May 31, 1928. Serial No. 281,695.

The present invention relates to carburetors for use in conjunction with hydrocarbons and has for its prime object to provide a carburetor which is exceedingly economical in use and embodies the features of construction which utilize the volatile gases collected in the crank case of the engine with a mixture of monoxide collected from the exhaust of the engine, such as forms the subject matter of my co-pending application, Serial No. 281,696, filed May 31, 1928.

A still further very important object of the invention resides in the provision of a carburetor of this nature which is simple in its construction, compact and convenient in its arrangement of parts, inexpensive to manufacture and thoroughly efficient and reliable in its use and operation.

With the above and numerous other objects in view as will appear as the description proceeds, the invention resides in certain novel features of construction, and in the combination and arrangement of parts as will be hereinafter more fully described and claimed.

In the drawing:

Figure 1 is a side elevation of an engine showing my improved carburetor mounted thereon,

Figure 2 is a vertical longitudinal section through the carburetor,

Figure 3 is a horizontal section therethrough taken substantially on the line 3—3 of Figure 2, and

Figure 4 is an enlarged detail section taken substantially on the line 4—4 of Figure 1.

Referring to the drawing in detail, it will be seen that the engine 5 is conventional or may be of any preferred construction and includes among other usual elements an intake manifold 6, an exhaust manifold 7, and a breather pipe 8.

The carburetor includes a reservoir float chamber casing 9 threaded engaged on an annular flange 10 depending from the mixing chamber casing 11. Pipes 12 and 14 project from opposite sides of this chamber 11. The pipe 14 is connected by suitable means 15 with the intake manifold 6. The pipe 12 is open to the atmosphere. A tube 16 depends from the top of the casing 11 and merges into a downwardly flared portion 18 being separated therefrom by a partition 19 with the valve seat opening 20 therein.

The lower end of the portion 18 merges into a tube 21 disposed at the bottom as at 22 by a wall which extends through the bottom of the reservoir float chamber case 9. The lower portion of the tube 21 is provided with perforations 23. The tube 16 is perforated as at 24.

Tubes 26 and 27 rise through the bottom of the case 9 one to each side of the tube 21 and terminate intermediate the ends of the tube 16. The tube 27 has a restriction in the intermediate portion thereof as at 28 and forms a valve seat. With the valve seat is associated a needle valve 29, the shank of which is threaded through the top of the casing 11.

The bottom wall of the case 11 as is indicated at 30 is of an inverted frusto-conical formation to provide a simple opening through which the tube 21 extends. The tube 26 is provided with diagonally registered openings 33 for slidably receiving a valve shank 34 extending through an opening 35 in the sleeve 16.

A disk 36 is formed at the other end of this shank and normally rests on a member 37. This disk is disposed adjacent the inner end of the pipe 12. The tubes 26 and 27 are provided below the carburetor with branches 40 and 41 merging into a pipe 42.

A float 43 is mounted in the case 9 and is fixed to a lever 44 rockably mounted as at 45 in the compartment 46 of extension 47 formed on one side of the case 9 and access may be had thereto by removing a plug 48.

The bottom wall of the extension 47 is relatively thick and has a conduit 49 formed therein offset as at 50 to provide a valve seat with which cooperates a slidable valve 51 connected with the lever 44. When the gasoline in the case 9 becomes low the float sinks by gravity to raise the valve so as to refill this case as will be quite apparent.

A pipe 52 is connected with the conduit 49 and leads from a suitable source of gasoline as will be readily understood. The exhaust manifold 7 is formed with an opening 54. A frusto conical sleeve 55 is threaded in the opening 54 with its smaller end interiorly of the manifold 7.

The pipe 42 leads into the sleeve 55 and is then coiled longitudinally as at 56 for a slight distance in the manifold 7 and merges into a return section 57 which extends out through the sleeve 55 and is connected as at

58 with the breather pipe 8. The coil 56 acts as a heating coil as the gases pass through it from the breather pipe to lead these heated gases to the tubes 26 and 27 and a certain amount of exhaust gas is drawn into the pipe 42 by a branch 59 having a funnel shaped terminal 60 in the sleeve 55.

A throttle valve 61 is located in the pipe 14. A needle valve 62 is threadedly engaged through the top wall of the case 11 to cooperate with the valve seat 20. When the engine is in operation to cause the suction through the pipe 14 air is drawn in through the pipe 12 and gasoline is drawn up through tube 21 and tube 16 to be mixed with the air to form the combustible mixture for the engine.

As the throttle valve 61 is opened and the suction becomes greater the disk 36 is affected to be moved away from the pipe 12 inwardly of the case 11 so as to bring a port 65 in the shank 34 in registry with the interior of the tube 26 so that the fumes may escape up through this tube to the mixing chamber and at the same time the shank cuts off some of the supply of gasoline spray coming from the valve seat 20 because this shank crosses a portion of the tube 16 as will be appreciated.

The needle valve 29, of course, has fixed adjustment and a certain amount of vapor is always delivered therethrough. This carburetor, therefore, keeps the crank case free of volatile gases thereby assisting in purifying the crank case oil and preventing the volatile gases therein from doing any harm. The mixture of volatile gases and monoxide which are heated in the coil 56 are heated to a very high degree and are taken into the carburetor to be mingled with the gasoline vaporized mixture.

The gas from the breather and the exhaust heated by the coil tends to vaporize the gasoline, and warm it so that when it finally reaches the combustion chamber it is in as perfect condition as possible for combustibility. The monoxide gas and the breather gas by laboratory tests, have shown that it possesses a quicker heating expansion than that of gasoline and air alone.

This new mixture tends to make a stronger and more powerful mixture in union with gasoline than that of gasoline and air. The gas from the breather is combustible in itself when heated and derives this quality from the volatile fumes of the oil and other liquid in the oil. This carburetor structure, therefore, tends to save gasoline and use in its place an almost equal burning equivalent.

Thus more power is attained, carbon is reduced and the crank case is maintained free of fumes. It is thought that the construction, utility, operation and advantages of this invention will now be quite apparent to those skilled in this art without a more detailed description thereof.

The present embodiment of the invention has been disclosed in detail merely for the purposes of exemplification since in actual practice it attains the features of advantage enumerated as desirable in the statement of the invention and the above description.

It will be apparent that changes in the details of construction, and in the combination and arrangement of parts may be resorted to without departing from the spirit or scope of the invention as hereinafter claimed or sacrificing any of its advantages.

Having thus described my invention, what I claim as new is:

1. In combination, an internal combustion engine comprising an intake manifold and a crank case, a carburetor including a mixing chamber, a float chamber below the mixing chamber, a sleeve extending through the chamber having apertures to receive gasoline from the float chamber and apertures to deliver the gasoline for the mixing chamber, an air intake pipe leading into the mixing chamber, a pipe leading from the mixing chamber adapted to be connected with the said intake manifold, a tube rising through the chambers terminating in the mixing chamber, said tube last mentioned adapted to be connected with the breather pipe of the said crank case.

2. In combination, an internal combustion engine comprising an intake manifold and a crank case, a carburetor including a mixing chamber, a float chamber below the mixing chamber, a sleeve extending through the chamber having apertures to receive gasoline from the float chamber and apertures to deliver the gasoline for the mixing chamber, an air intake pipe leading into the mixing chamber, a pipe leading from the mixing chamber adapted to be connected with the said intake manifold, a tube rising through the chambers terminating in the mixing chamber, said tube last mentioned adapted to be connected with the breather pipe of said crank case, a shank slidable through openings in the last mentioned tube and having an end in an opening in the first mentioned tube, said shank being inclined and terminating at its lower end in a disk, a rest in the carburetor for said disk, said disk being located at the inner end of the air intake pipe, said shank having a port normally out of registry with the interior of the second mentioned tube so that when a certain amount of air is sucked in through the air intake pipe it will move the disk inwardly to bring the port into registry with the second mentioned tube and cause the shank to partially cut out the first mentioned tube.

3. In combination, an internal combustion

engine comprising an intake manifold and a crank case, a carburetor including a mixing chamber, a float chamber below the mixing chamber, a sleeve extending through the chamber having apertures to receive gasoline from the float chamber and apertures to deliver the gasoline for the mixing chamber, an air intake pipe leading into the mixing chamber, a pipe leading from the mixing chamber adapted to be connected with the said intake manifold, a tube rising through the chambers terminating in the mixing chamber, said tube last mentioned adapted to be connected with the breather pipe of said crank case, a shank slidable through openings in the last mentioned tube, said shank being inclined and terminating at its lower end in a disk, a rest in the carburetor for said disk, said disk being located at the inner end of the air intake pipe, said shank having a port normally out of registry with the interior of the second mentioned tube so that when a certain amount of air is sucked in through the air intake pipe it will move the disk inwardly to bring the port into registry with the second mentioned tube and cause the shank to partially cut out the first mentioned tube, a third tube rising through the chamber terminating in the mixing chamber, branches connecting the second and third mentioned tube at the bottom of the carburetor.

4. In combination, an internal combustion engine, comprising an intake manifold and a crank case, a carburetor including a mixing chamber, a float chamber below the mixing chamber, a sleeve extending through the chamber having apertures to receive gasoline from the float chamber and apertures to deliver the gasoline for the mixing chamber, an air intake pipe leading into the mixing chamber, a pipe leading from the mixing chamber adapted to be connected with the said intake manifold, a tube rising through the chambers terminating in the mixing chamber, said tube last mentioned adapted to be connected with the breather pipe of said crank case, a shank slidable through openings in the last mentioned tube, said shank being inclined and terminating at its lower end in a disk, a rest in the carburetor for said disk, said disk being located at the inner end of the air intake pipe, said shank having a port normally out of registry with the interior of the second mentioned tube so that when a certain amount of air is sucked in through the air intake pipe it will move the disk inwardly to bring the port into registry with the second mentioned tube and cause the shank to partially cut out the first mentioned tube, a third tube rising through the chamber terminating in the mixing chamber, branches connecting the second and third mentioned tube at the bottom of the carburetor, a needle valve structure in the third tube.

5. In combination, an internal combustion engine comprising an intake manifold and a crank case, a carburetor including a mixing chamber, a float chamber below the mixing chamber, a sleeve extending through the chamber having apertures to receive gasoline from the float chamber and apertures to deliver the gasoline for the mixing chamber, an air intake pipe leading into the mixing chamber, a pipe leading from the mixing chamber adapted to be connected with the said intake manifold, a tube rising through the chambers terminating in the mixing chamber, said tube last mentioned adapted to be connected with the breather pipe of said crank case, a shank slidable through openings in the last mentioned tube, said shank being inclined and terminating at its lower end in a disk, a rest in the carburetor for said disk, said disk being located at the inner end of the air intake pipe, said shank having a port normally out of registry with the interior of the second mentioned tube so that when a certain amount of air is sucked in through the air intake pipe it will move the disk inwardly to bring the port into registry with the second mentioned tube and cause the shank to partially cut out the first mentioned tube, a third tube rising through the chamber terminating in the mixing chamber, branches connecting the second and third mentioned tube at the bottom of the carburetor, a needle valve structure in the third tube, a needle valve structure in the first mentioned tube.

In testimony whereof I affix my signature.

JACK SAMUEL BRONCATO.