Nov. 21, 1933. J. P. HAUKE 1,936,111

ATTACHMENT FOR INTERNAL COMBUSTION ENGINES

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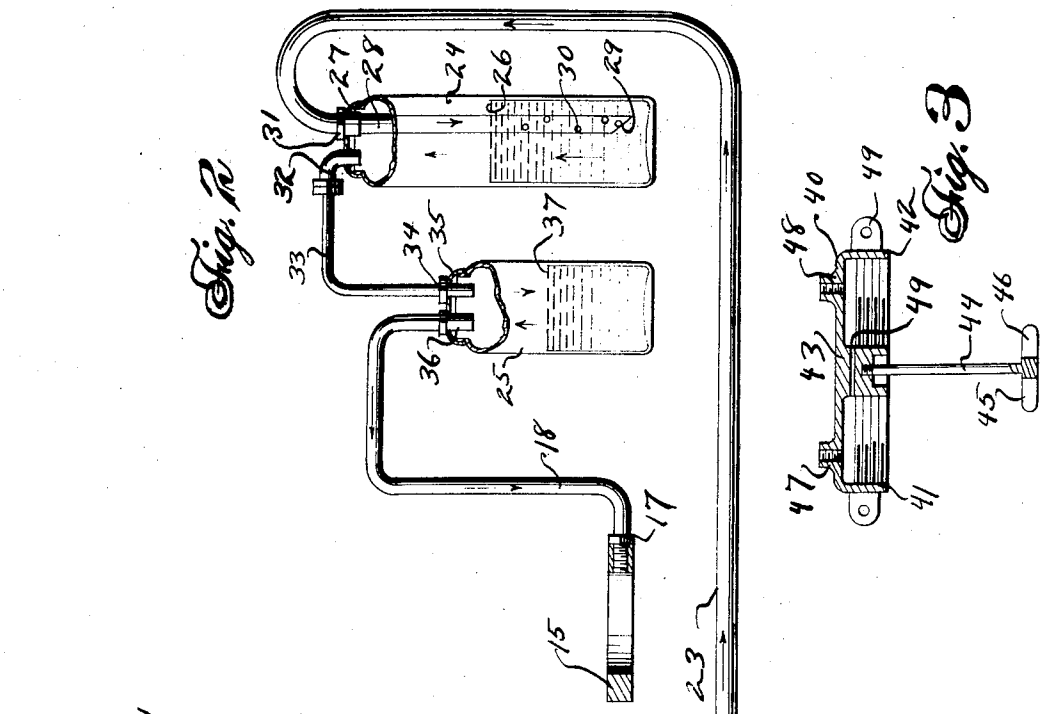


Fig. 2

Fig. 3

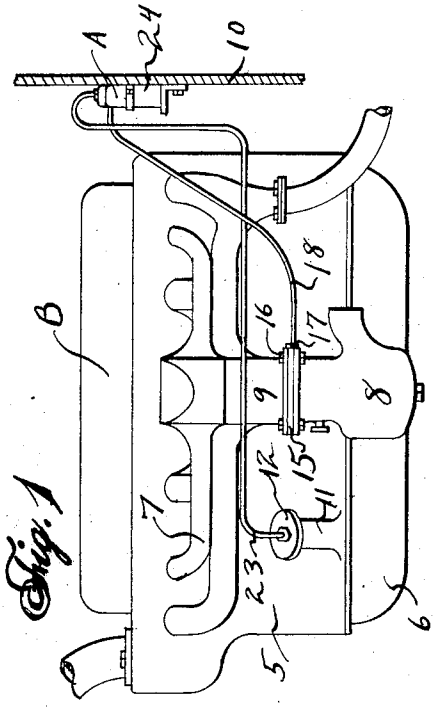


Fig. 1

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ATTACHMENT FOR INTERNAL COMBUSTION ENGINES

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1 Claim. (Cl. 123—119)

This invention appertains to internal combustion engines, and more particularly to an attachment for the engine for introducing a combustible mixture into the intake manifold.

One of the primary objects of my invention is the provision of a novel charge forming device, which can be readily incorporated with the conventional type of internal combustion engine and used in conjunction with the ordinary carburetor, the device embodying novel means for sucking the hot crank case vapors from the engine and introducing the same into the fuel charge immediately after the same leaves the carburetor.

Another important object of my invention is the provision of novel means for purifying these vapors prior to the introduction thereof into the intake manifold, so that all obnoxious matter will be removed from the vapors.

A further salient object of my invention is the provision of means for taking the vapors from the crank case of the engine and so treating these vapors prior to their entrance into the intake manifold that the same will be in a pure unadulterated condition and whereby these vapors will be rendered more volatile and at the same time act to prevent the forming of carbon in the engine and to lubricate the valves so as to prevent the sticking thereof.

A further object of my invention is the provision of novel means for taking the crank case vapors and subjecting the same to a predetermined treatment prior to their entrance into the intake manifold, said treatment consisting in passing the vapors through a jar or other receptacle containing a light lubricating oil, the passage of the vapors through the oil acting to purify the vapors and at the same time to charge these vapors with the oil forming a hydrocarbon mixture, the vapors then being passed over the surface of a highly volatile fluid, such as high test gasoline or alcohol, contained in another jar, whereby the purified hydrocarbon vapors will be further saturated with a highly combustible vapor, the mixture being led into the path of the charge of the engine as the same leaves the carburetor.

A still further object of my invention is to provide an improved charge forming device for internal combustion engines, which will be extremely durable and efficient in use, one that will be simple and easy to manufacture and one which can be placed upon the market and incorporated with an engine at a small cost.

With these and other objects in view, the invention consists in the novel construction, arrangement and formation of parts, as will be hereinafter more specifically described, claimed and illustrated in the accompanying drawing, in which:

Figure 1 is a side elevation of an internal combustion engine showing my improved device applied thereto;

Figure 2 is a diagrammatic view showing the parts of my device on a larger scale, and illustrating the arrangement of parts relative to one another.

Figure 3 is a detail sectional view illustrating one preferred means of supporting the jars.

Referring to the drawing in detail, wherein similar reference characters designate corresponding parts throughout the several views, the letter "A" indicates my improved charge forming device and "B" an internal combustion engine with which the same can be associated.

The internal combustion engine "B" can be considered as being of any desired size, type or make and includes the cylinder casting 5 having the crank case 6 attached thereto. Leading to the cylinders is the intake manifold 7 having connection with the carburetor 8 by means of the intake pipe 9.

The crank case 6 is provided with the usual breather pipe 11 which can be closed by a cap 12.

My improved device "A" comprises a substantial gasket or flange 15, which can be formed on any desired material, such as brass, bronze, or aluminum, but it is preferred to use a metal which will have somewhat of a cooling effect on the introduced charge. This gasket 15 is interposed directly between the carburetor 8 and the intake pipe 9 and is clamped therebetween by the use of suitable bolts 16 or the like. Connected with the gasket 15 by means of a suitable nipple 17 is a suction pipe 18.

In accordance with my invention, I connect with the cap 12 of the breather pipe 11, substantially at its axial center, an intake tube 19. This tube 19 extends a considerable distance inward of the cap 12 so as to lie well within the breather pipe when the cap 12 is associated with said breather pipe. Another preferred means can be provided for connecting the intake tube 19 with the cap 12, and, as shown, I have provided nuts 20 for this purpose. The lower end of the tube 19 is preferably cut off at an angle as indicated by the reference character 21 to facilitate the entrance of the crank case gases into the same and the tube is provided with a plurality of inlet openings 22. These inlet openings 22 are in relative close proximity to one another and the

exact number thereof can be determined by experimentation according to the size and the type of the engine with which my device is associated.

Leading from the tube 19 is a conduit pipe 23 which is of a relatively large diameter, so that the hot gases collected by the tube 19 from the crank case will readily flow through the conduit pipe. Supported in an elevated position are a pair of jars or receptacles 24 and 25. These jars can be arranged in any desired position, but I prefer to mount the same on the dash board 10 of a motor vehicle by the use of suitable clips or the like.

The jar 24 is of a larger size than the jar 25 and receives a light lubricating oil 26. This oil is placed in the jar 24 until the same substantially half fills the jar. The upper end of the jar is closed by a cap 27 and this cap supports the depending delivery tube 28.

The tube 28 extends into the oil and terminates short of the lower end of the jar. The lower end of the tube 28 can be angled as at 29 and the portion of the tube, which is immersed in the oil can be provided with outlet openings 30. I prefer to provide a less number of the openings 30 than the openings 22 in the tube 19, as I have found that more advantageous results can be had by utilizing a comparatively small number of openings in the outlet tube 28.

The conduit pipe 23 is connected to the tube 28, such as by the use of a nipple 31 and thus the vapors taken from the crank case will be introduced directly into the oil 26. The cap 27 also supports an outlet nipple 32 at one side of the tube 28 and this nipple 32 has connected therewith, a short conduit pipe 33 which leads into the jar 25 through the use of a suitable nipple 34. The nipple 34 is carried by the cap 35 of the jar 25. As shown, the conduit pipe 33 is of a relatively small diameter and of a less diameter than the conduit pipe 23. A second nipple 36 is connected with the cap 35 of the jar 25 and this nipple receives the suction pipe 18, heretofore referred to.

The jar 25 is one-half filled with a highly volatile liquid, such as high test gasoline 37 or alcohol. In operation of my improved device, the same is connected with the internal combustion engine as described, and when the engine is running, a constant suction will be created in the suction pipe 18, as is readily understood by those skilled in the art. The suction in the pipe 18 will in turn create a suction in the jar 25 and this suction will in turn create a suction in the jar 24 through the conduit 33. The suction in the jar 24 will create a suction in a pipe 23 which will in turn suck the hot vapors from the crank case 6 into the intake tube 19.

Thus, the hot vapors sucked from the crank case will flow through the pipe 23 and will be introduced into the oil 26 in the jar 24. The passage of these vapors through the oil will tend to purify these vapors and at the same time permit the vapors to be charged with the oil. These vapors in turn flow through the pipe 33 and as this pipe is of a relatively small diameter, the vapors are impinged with considerable force against the surface of the volatile fluid 37 in the jar 25. The vapors then pick up the gaseous vapors in the jar 25 and these charged vapors then flow into the intake manifold directly in advance of the carburetor. This charge mingles with the charge leaving the carburetor and is introduced into the cylinders of the engine therewith.

I have found by actual experiments that my charge thus formed gives many advantages to the engine over the usual carbureted charge, and the same will reduce to a large extent, the forming carbon in the engine. The oil picked up by the crank case vapors from the jar 25 will be deposited on the valves and thus insure the proper lubrication thereof at all times and thus prevent the sticking of said valves. My device operates without noise of any kind and my device also tends to relieve objectionable noises generally apparent during the running of an engine.

In Figure 3 of the drawing, I have illustrated a preferred means supporting the jars on a dashboard of a vehicle, and this means may comprise a head 40 formed from a single casting. This casting preferably includes depending caps 41 and 42 integrally connected together by a bridge piece 43.

These caps 41 and 42 are internally threaded for receiving the necks of the jars containing the light lubricating oil and gasoline respectively. The bridge piece 43 can support in any desired way a reinforcing bar 44 having yokes 45 and 46 for engaging the jars and adjacent to their lower ends. The caps 41 and 42 have formed thereon the nipples 47 and 48 for receiving the suction and intake pipes respectively, while the bridge piece 43 is provided with a port 49 for forming communication between the jars.

Attaching ears 49 can be formed on the casing to facilitate the securing of the casting on the dashboard of the vehicle.

Changes in details may be made without departing from the spirit of the scope of this invention, but what I claim as new is—

I claim:

As a new article of manufacture, an auxiliary charge forming device for internal combustion engine adapted to be associated with ordinary engines and a fuel supply system therefor, comprising a pair of independent jars, said jars being partially filled respectively with oil and a volatile liquid, an intake manifold gasket, an intake suction pipe communicating with the gasket, means connecting the suction pipe with the upper end of the jar containing the volatile liquid, a crank case vapor collecting tube, a discharge tube extending into the oil in the other jar and terminating short of the lower end thereof, a conduit of relatively large diameter connecting the vapor collecting tube and discharge tube together, and a conduit of relatively small diameter connecting the upper end of the jar containing the oil with the upper end of the jar containing the volatile liquid, whereby the cleansed oil laden air will be impinged on the upper surface of the volatile liquid.

JOHN P. HAUKE.