A. DE CLAIRMONT.

ATTACHMENT FOR AUTOMOBILE ENGINES.

APPLICATION FILED DEC. 3, 1914.

1,164,930.

Patented Dec. 21, 1915.

2 SHEETS—SHEET 1.

Fig. 1.

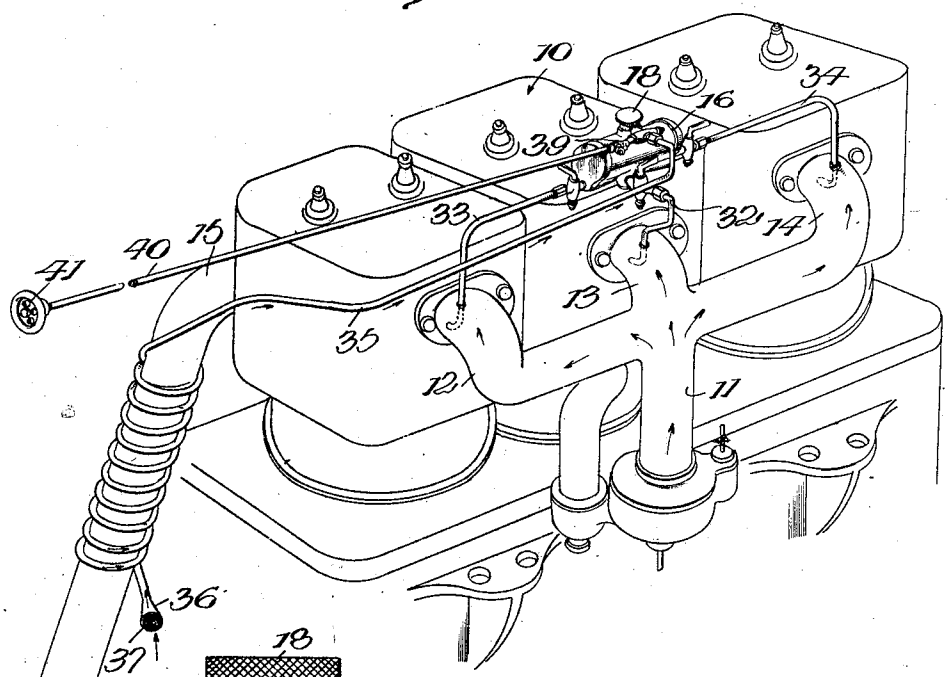
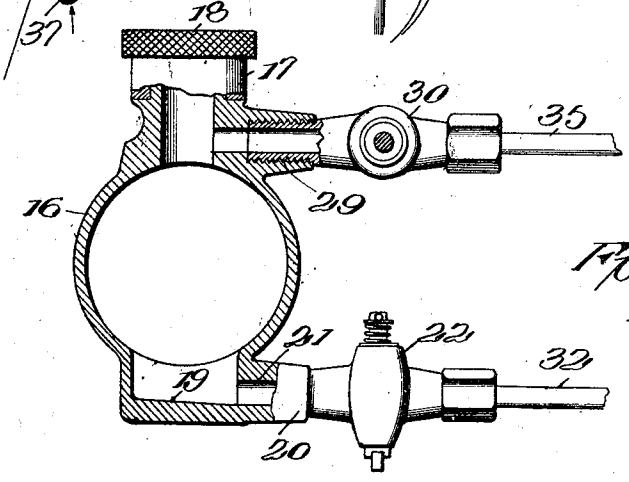


Fig. 4.



Inventor

A. De Clairmont

Witnesses

W. F. Woodman.

W. H. Woodman.

By Wm. Macy, Attorneys.

A. DE CLAIRMONT.

ATTACHMENT FOR AUTOMOBILE ENGINES.

APPLICATION FILED DEC. 3, 1914.

1,164,930.

Patented Dec. 21, 1915.

2 SHEETS—SHEET 2.

Fig. 2.

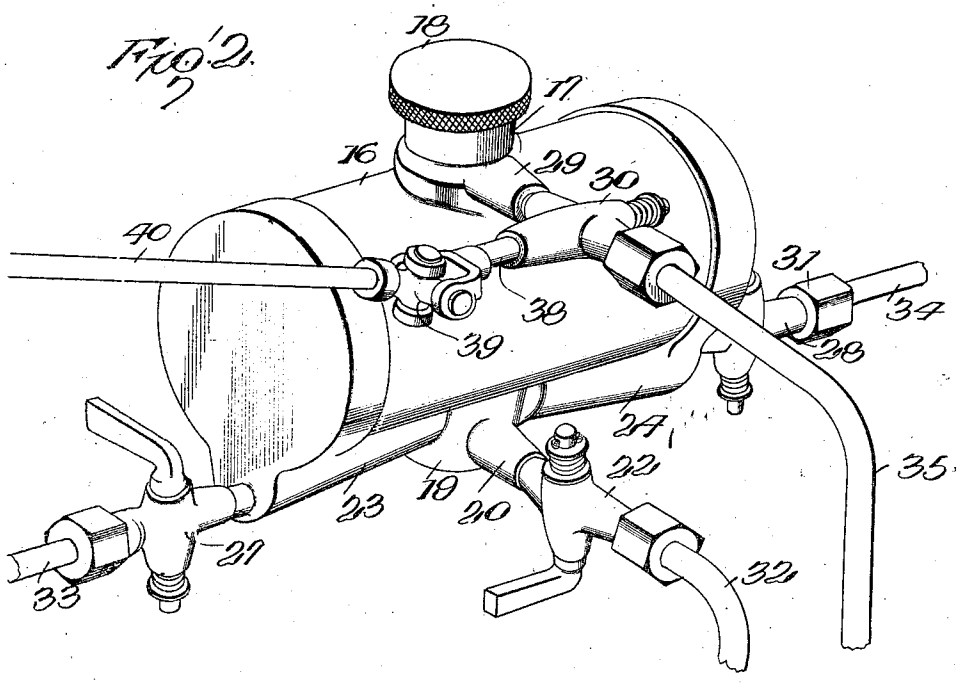
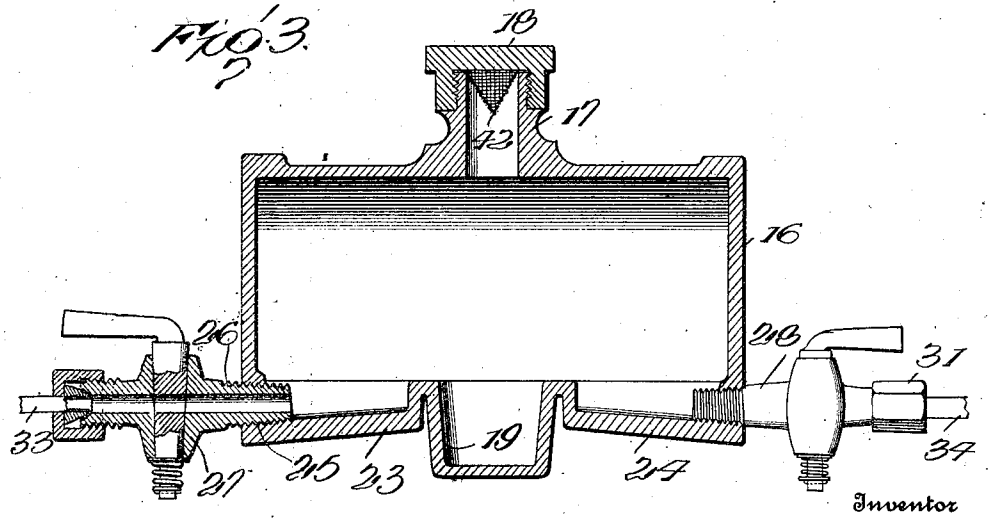


Fig. 3.



Witnesses

W. N. Woodson

W. B. Woodson.

Inventor

A. DeClairmont

By Howson & Howson, Attorneys.

UNITED STATES PATENT OFFICE.

ADOLFO DE CLAIRMONT, OF TOLEDO, OHIO

ATTACHMENT FOR AUTOMOBILE-ENGINES.

1,164,930. Specification of Letters Patent. Patented Dec. 21, 1915.

Application filed December 3, 1914. Serial No. 875,312.

To all whom it may concern:

Be it known that I, ADOLFO DE CLAIRMONT, a citizen of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Attachments for Automobile-Engines, of which the following is a specification.

My present invention relates to a new and improved attachment for internal combustion engines and has for its primary object the provision of an attachment capable of being operated in a number of different ways for a number of widely differing purposes.

More specifically, the primary object of my present invention consists in the provision of an attachment for supplying additional air to the cylinders of an internal combustion engine of the multiple cylinder type, such as is commonly employed upon self-propelled vehicles, so arranged that the additional air supplied will be admitted to the cylinders at points adjacent the intake valves thereof, instead of being admitted into the carbureter or intake manifold and thus indirectly into the cylinders, as is now the custom.

At this point, it should be noted that as a result of a prolonged and careful series of tests, I have learned that, although admission of air directly into the manifold of an internal combustion engine, produced advantageous results with the earlier and inefficient forms of carbureters on the market, with the more recent and improved types of carbureters, additional air so supplied is of but little, if any, benefit. I have also found that if hot air be supplied directly into the valve chambers of the engine cylinders, as carried out by my present invention, this air immediately expands, due to the heat of the cylinders, thoroughly mixing with the gasolene vapor drawn into the valve chambers through the intake manifold leading from the carbureter, causing the engine to run at higher speed when running idly and resulting in increased efficiency in the development of actual power when the engine is under load. I have further found that the efficiency of the power plant is increased in proportion to the proximity of the air supply to the intake valves of the engine cylinders.

A still further object of my invention consists in the provision of an appliance of the above described character which may also be utilized in supplying a decarbonizing fluid or mixture to the engine cylinders for the purpose of removing carbon from the cylinders and pistons.

In this connection, a more specific object of my invention consists in so arranging the appliance or engine attachment that in multiple cylinder engines, this decarbonizing fluid may be supplied to one or more pairs of engine cylinders, the spark plugs of which have been electrically disconnected from the ignition system, while the engine is run idly by the remaining cylinders. This is a distinct advantage as it is thus possible to remove the carbon deposits from the cylinders while the engine is actually running and yet without having any explosions occurring in the cylinders actually being treated.

It has been a long and well recognized fact that coal oil, or a mixture of coal oil and wood alcohol, constitutes one of the best means for removing carbon from the cylinders of internal combustion engines, but its use for this purpose has been previously more or less objected to for two reasons. If the coal oil is placed in the cylinders and left over night, as is one method of treating the cylinders, the first turn of the crank, upon starting the engine, ejects all of the coal oil instead of running it through the cylinders in a slow manner while the engine is heated, the result being an inefficient cleaning of the engine cylinders. On the other hand, the only other way, previously employed, for removing carbon deposits from cylinders by the use of coal oil, or a mixture of coal oil and alcohol, has been by removing the tops of the cylinder castings, or otherwise completely taking down the engine to open up the cylinders and expose the pistons. This method, while effective, has been little utilized, due to the time and labor necessary in its performance.

A still further object of my invention is to provide an attachment for explosive engines capable of accomplishing the above objects and also so arranged that it may be utilized for lubricating the engine cylinders and their pistons, after they have been freed from carbon, the arrangement being such that certain of the cylinders may be lubricated without any explosions occurring in

such cylinders, the engine being driven in the meantime by the remaining cylinders. With my improved device, the lubricating oil may be drawn into the cleaned cylinders as slowly as desired to lubricate the cylinders and pistons, which have been freed from lubricating oil by the action of the kerosene, perfect lubrication of the walls of the cylinders and of the pistons, without burning out of the lubricant, being thereby attained.

A still further object of my present invention consists in the provision of an appliance or apparatus for carrying out the above objects, which is also capable of being employed for priming engine cylinders when starting the engine in cold weather. The method now customary for priming the cylinders of an engine consists in injecting the gasolene directly into the cylinders, spinning the engine a few times to take in sufficient air to vaporize the gasolene, the ignition circuit being opened in the meantime, and then cranking the engine in the usual manner with the current turned on. This requires very careful gaging of the amount of gasolene injected into the cylinders as too much gasolene so supplied prevents, rather than assists, starting the car and also cuts the lubricating oil in the cylinders. By employing my improved appliance as a means for priming the cylinders, the crude gasolene or mixture of gasolene and ether, or either as preferred, instead of being introduced directly into the cylinders, is introduced gradually and during cranking of the engine into the intake valve chambers and drawn into the engine only by the air drawn in through the engine manifold, resulting in filling the cylinders with a heavily vaporized and rich mixture.

A still further object of my invention consists in the provision of a receptacle or reservoir through which the heated air may be passed when my appliance is utilized for supplying additional air to the cylinders and which may be employed to store a carbon removing fluid or a priming fluid when the apparatus is being used for such purposes.

With these and other objects in view, my invention will be more fully described, illustrated in the accompanying drawings, and then specifically pointed out in the claims which are attached to and form a part of this application.

In the drawings: Figure 1 is a fragmentary perspective view of a conventional form of multiple cylinder, internal combustion engine, illustrating my improved attachment applied thereto; Fig. 2 is a perspective view of my attachment removed from the engine, the various pipe leads being shown broken away to permit illustration upon an enlarged scale: Fig. 3 is a vertical, central, longitudinal sectional view of the reservoir forming a portion of my improved attachment; Fig. 4 is a vertical, central, transverse sectional view of the reservoir.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

In order to insure a full and accurate understanding of my invention, its application to the engine, and method of operation, I have illustrated it in connection with a conventional form of six-cylinder, internal combustion engine 10 having the usual intake manifold 11, including branches 12, 13 and 14 leading to the cylinders which, in the type of engine shown, are grouped in pairs, and a conventional exhaust manifold 15.

In the preferred embodiment of my invention, I employ a reservoir 16 of any desired size and shape although I prefer to construct it in the form of a cylinder which shall be horizontally disposed when in use. This reservoir is formed of any suitable metal and is provided in its upper wall with an externally threaded nipple 17 through which any desired liquid may be introduced, a threaded cap 18 being provided to close this nipple when the reservoir has been filled. Directly below the nipple, the bottom wall is provided with a transversely extending extension 19 projecting below the true bottom of the reservoir and communicating with the reservoir. An internally threaded nipple 20 leads from one end of this extension, its outlet passage 21, in effect, forming a continuation of the bottom wall of the extension as shown in Fig. 4, in order that any liquid settling in the extended portion 19 of the reservoir may be completely drained through the nipple. A cut-off valve 22 of any preferred type, usually a turn plug valve of the nature illustrated, is threaded into the nipple 20 to provide means for controlling the flow of either fluid or gases from the reservoir.

At either side of the extension 20 and preferably communicating with it, the reservoir is provided with oppositely directed, longitudinally projecting extensions 23 and 24 which also project below the true bottom of the reservoir, although they communicate with the reservoir. The outer ends of these latter extensions are provided with tapped bores 25 to receive the threaded nipples 26 of valves 27 and 28, respectively, these valves being of the same type as the valve 22.

An internally threaded nipple 29 branches from the filling nipple 17 and is threaded to receive another cut-off valve 30, corresponding to the cut-off valve 22.

Each of the cut-off valves, above described, is provided with a union coupling device 31 by means of which pipes may be

secured to the valves to supply air or gases to the engine manifold, as will be later explained.

In applying my improved apparatus to a six-cylinder engine of the type shown in Fig. 1, pipes 32, 33 and 34 are connected to the cut-off valves 22, 27 and 28, respectively, and have their free ends introduced into the branches 13, 12 and 14, respectively, of the intake manifold 11. The ends of these pipes, so introduced, are laterally bent to project into the valve chambers of the intake valves of the engine, as shown in dotted lines in Fig. 1. An additional pipe 35 leads from the cut-off valve 30 to the exhaust manifold 15 and is coiled for a considerable length about this manifold as fully shown in Fig. 1, its free end being preferably flared somewhat as shown at 36 and covered with a screen 37 of wire gauze or other suitable foramiuous material.

The reservoir 16 may be positioned at any convenient point adjacent the engine, but should be at such an elevation that liquids may feed by gravity from it to the various manifold branches and should be horizontally disposed in order that liquids may flow as readily to one branch as to the other, assuming that the engine is in a level position.

If the appliance is attached to a four-cylinder engine, but two leads to the manifold will be required and the pipe 32 is usually omitted, the valve 22 being permanently closed or removed and the nipple 20 closed by a threaded plug. Of course, with a two-cylinder engine another of the pipes, either the pipe 33 or 34, will be removed and the valve closed.

When the above described appliance is used as a means for supplying heated air to the engine cylinders, the valves 22, 27, 28 and 30 are all opened. Under these conditions, the suction of the engine will draw air through the open end of the pipe 35, this air being heated during its passage through that portion of the pipe wound about the exhaust manifold and the heated air so drawn in will pass into the reservoir 16 and so by way of the pipes 32, 33 and 34 to the various engine cylinders. The amount of air supplied may be roughly regulated by proper adjustment of the valve 30 and then the proper amount of air for each pair of cylinders separably regulated by adjustment of the valves controlling the flow through the pipes leading to such cylinders. This added adjustment is necessary as it is well known that oftentimes, for one reason or another, a richer mixture is normally fed to one pair of cylinders than to the others. It is well, however, to run the engine for a short time with the valves closed before opening them in order to heat the exhaust pipe and thus avoid supplying cold air to the engine cylinders while the engine is still cold. Means may be provided for manually operating one or all of these valves from the dash of the vehicle, if deemed advisable. For instance, in the drawings, I have illustrated the valve 30 as provided with a valve stem 38 connected to a universal joint 39 from which leads an operating rod 40. This rod, when the device is applied, extends from the dash of the vehicle and carries a small hand wheel 41 by means of which it may be rotated. As will be readily apparent, rotation of this rod will cause opening or closing of the valve 30. Under these conditions, the valves 22, 27 and 28 are properly adjusted and the supply of air to the engine cylinders then controlled wholly from the dash of the vehicle by means of the rod 40 and valve 30.

When carbon deposits are to be removed from the cylinders, the engine is first run a sufficient length of time to become thoroughly heated, after which all the valves 22, 27, 28 and 30 are closed. The cap 18 is then removed and a suitable quantity of any carbon removing fluid, such as coal oil and alcohol, is poured into the reservoir. The spark plugs are then either removed from one pair of cylinders or the leads from the magneto or other source of current disconnected. With the engine still running upon the remaining cylinders, the valve controlling the flow of fluid to that pair of cylinders thus rendered inactive is opened to permit flow of a sufficient quantity of decarbonizing fluid to such cylinders. After one pair of cylinders has been cleaned, the spark plugs or their leads are replaced and another pair of cylinders treated in the same manner, this being repeated until all cylinders have been thoroughly cleaned and all decarbonizing fluid run out of the reservoir. This complete draining of the reservoir is insured by having the outlet valves lead into the downward extensions of the reservoir with their walls, in effect, forming continuations of the bottom of the reservoir.

As soon as the cylinders have been cleaned of carbon, they may be lubricated by repeating the above described operations, a proper lubricating oil being poured into the reservoir in place of the decarbonizing fluid. If desired, this lubrication can be accomplished without disconnecting the spark plugs of the cylinders being lubricated, although I prefer to disconnect them in order to avoid burning out the freshly supplied lubricating oil before it has a chance to thoroughly cover the walls of the cylinders and pistons.

It will of course be clear that the appliance may be utilized to advantage for priming the engine in cold weather, a suitable quantity of gosolene being poured into the reservoir and all of the valves 22, 27 and 28 opened a slight distance to permit flow of a sufficient quantity of gasolene directly into the valve chambers of the various cylinders.

Inasmuch as the decarbonizing fluid, lubricating oil, gasolene or other liquid employed, is supplied through the nipple 17 of the receptacle, I generally provide a removable strainer 42 which seats in the open end of the nipple, being normally clamped in place by the cap 18. This strainer should be formed of fine brass gauze in order that it will not rust.

When forming the reservoir, the depressed portions 19, 23 and 24 providing the drainage chambers referred to, should be so proportioned that each chamber, when exactly filled, will hold the proper amount of liquid to supply a pair of engine cylinders. This amount is usually substantially two teaspoonfuls as this is the amount of priming fluid required to properly prime a pair of cylinders. It will, therefore, be seen that if exactly six teaspoonfuls of priming fluid be poured into the reservoir, it will exactly fill these three chambers and each chamber will secure its proper share. All danger of over priming certain cylinders and of failing to prime other cylinders is, therefore, avoided.

It will of course be understood that I do not wish to be limited to the specific details of construction, illustrated and described, as various changes, within the scope of the appended claims, may be made at any time, without in the slightest degree departing from the spirit of my invention.

Having thus described the invention, what is claimed as new is:

1. An attachment for internal combustion engines including a reservoir having a normally closed filling opening, a valved pipe leading from the bottom of the reservoir with its free end adapted for insertion through a branch of an intake manifold of an engine to project into the valve chamber thereof, and a valved pipe leading from the upper portion of the reservoir and adapted to be wound about the exhaust manifold of the engine.

2. An attachment for internal combustion engines including a reservoir having a normally closed filling opening, a plurality of valves communicating with the lower portion of the reservoir, pipes leading from the valves and adapted at their free ends for communication in the branches of an intake manifold, a valve communicating with the upper portion of the reservoir, and a pipe leading from this valve and adapted to be wound about the exhaust manifold as a means for supplying heated air to the reservoir.

3. An attachment for internal combustion engines including a reservoir having a filling opening, a cap normally closing the opening, said reservoir having downward depressions in its bottom wall forming drainage chambers, valves communicating with the drainage chambers, pipes leading from the valves and adapted for communicative attachment with the branches of an intake manifold, a valve communicating with the upper portion of the reservoir, and a pipe leading from said latter valve and adapted to be wound about the exhaust manifold of an engine.

4. The combination with an internal combustion engine having an intake manifold provided with a plurality of branches leading to the various engine cylinders and an exhaust manifold leading from the engine cylinders, of a reservoir having depressed portions formed in its bottom intermediate its length and adjacent its ends to provide drainage chambers, valves communicating one with each of the chambers, pipes leading one from each valve into one of the branches of the exhaust manifold with their free ends directed into the valve chambers of the engine cylinders, an additional valve communicating with the upper portion of the reservoir, a pipe leading from said latter valve and coiled about the exhaust manifold, a screen over the open free end of said latter pipe, said reservoir being provided with a filling opening in its top, and a cap normally closing such opening.

5. An attachment for internal combustion engines including a reservoir, air valves leading from the reservoir, pipes connected to the air valves and adapted for insertion through the branches of an intake manifold of an engine, means including a rotatable valve for admitting air to the reservoir, said valve having a valve stem, a rod having universal joint connection with the valve stem and adapted to project through the dash of a vehicle, and a handle carried by the free end of the rod.

6. An attachment for internal combustion engines, including a reservoir and a pipe leading from the reservoir with its free end adapted for insertion through the intake manifold of an engine to project into the valve chamber thereof.

7. An attachment for internal combustion engines including a reservoir and a pipe leading from the reservoir with its free end adapted for insertion through the intake manifold of an engine to project into the valve chamber thereof, and a valve in the pipe.

8. An attachment for internal combustion engines including a reservoir and a pipe leading from the reservoir with its free end adapted for insertion through the intake manifold of an engine to project into the valve chamber thereof, and means for supplying heated air to the reservoir.

9. An attachment for internal combustion engines including a reservoir and a pipe leading from the reservoir with its free end adapted for insertion through the intake

manifold of an engine to project into the valve chamber thereof, means for supplying heated air to the reservoir, means for controlling the quantity of air so supplied, and means for controlling the passage of air through the pipe.

10. An attachment for internal combustion engines including a reservoir, a pipe leading from the reservoir with its free end adapted for insertion through the intake manifold of an engine to project into the valve chamber thereof, and a pipe leading from the reservoir and adapted to be wound about the exhaust manifold of the engine.

11. An attachment for internal combustion engines including a reservoir having a filling opening and formed with a drainage chamber of predetermined capacity, a pipe leading from the drainage chamber and adapted at its free end for insertion through a branch of the intake manifold of an engine, and a valve in the pipe.

In testimony whereof I affix my signature in presence of two witnesses.

ADOLFO DE CLAIRMONT. [L. S.]

Witnesses:

E. M. KEINATH,

M. LEROUX.