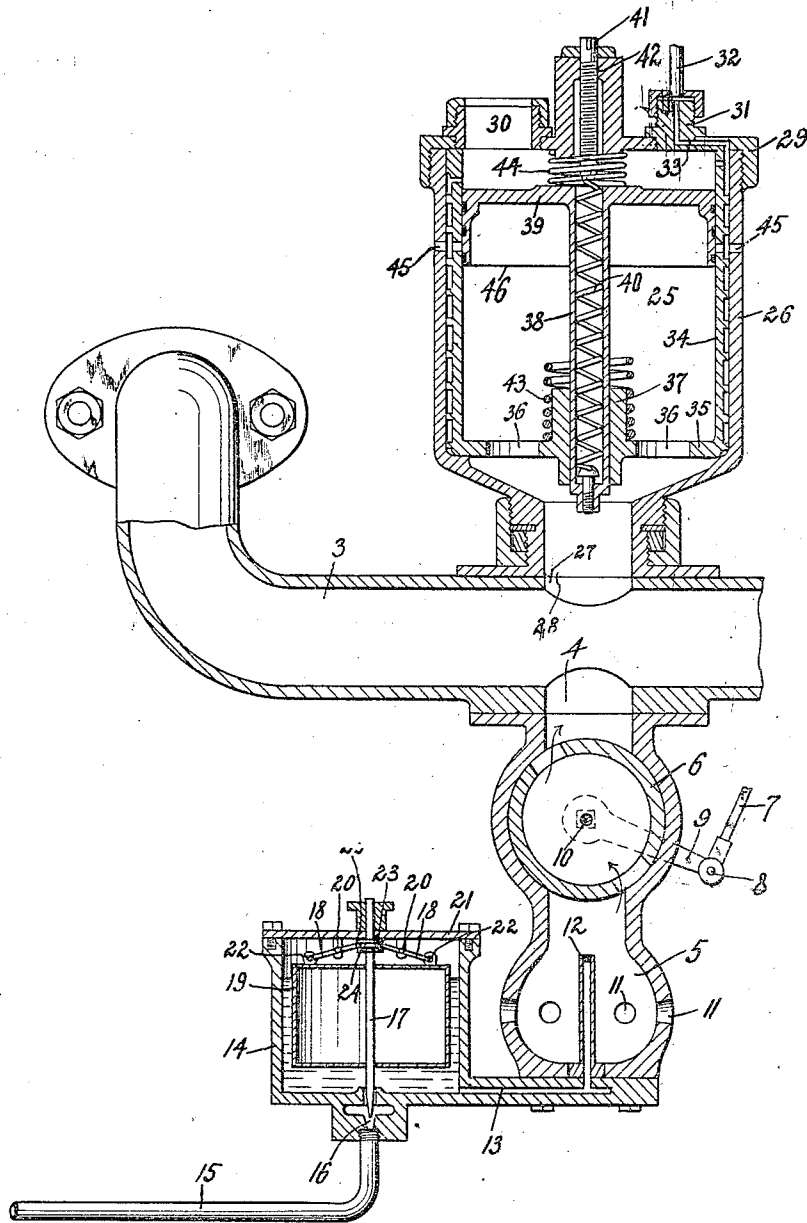


A. IBER.
ATTACHMENT FOR INTERNAL COMBUSTION ENGINES.
APPLICATION FILED MAY 31, 1911.

1,008,155.

Patented Nov. 7, 1911.



WITNESSES
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ATTACHMENT FOR INTERNAL-COMBUSTION ENGINES.

1,008,155.

Specification of Letters Patent.

Patented Nov. 7, 1911.

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To all whom it may concern:

Be it known that I, ALBERT IBER, a subject of the King of Hungary, and resident of Poughkeepsie, in the county of Dutchess and State of New York, have invented certain new and useful Improvements in Attachments for Internal-Combustion Engines, of which the following is a specification.

10 The present invention relates to an attachment for internal combustion engines which is to be inserted in that pipe of the engine which conveys the combustible mixture to the engine.

15 One of the objects of the invention is to provide a simple, compact and inexpensive contrivance for enabling an intimate and correctly proportioned and regulated mixture of hydrocarbon and air to be supplied to the cylinders of an engine or other points of consumption.

Another object of the invention is to produce an attachment for internal combustion engines, by means of which a uniform mixture will be supplied to the cylinders of the engine during the entire suction stroke of the working piston therein.

With these and other objects in view, which will appear as the nature of the invention is better understood, the same consists in the combination, arrangement and construction of parts hereinafter fully described, pointed out in the appended claims and illustrated in the accompanying drawings, it being understood that many changes may be made in the size and proportion of the several parts and minor details of construction without departing from the spirit or sacrificing any of the advantages of the invention.

One of the many possible embodiments of the invention is illustrated in the accompanying drawings, in which:

The figure is a central vertical section of a device constructed in accordance with the present invention.

In the drawings, the numeral 3 indicates the inlet pipe of an internal combustion engine, which leads either to the valve controlled inlet of the cylinder, if the engine is of the four cycle type, or to the crank-case, if the engine is of the two cycle type. The inlet pipe communicates through an opening 4 in said pipe with the mixing chamber 5 of the carbureter, the communication be-

tween said pipe and said mixing chamber being controlled by a throttle valve 6, which can be operated by a rod 7, pivotally connected at 8 with a lever 9, which is fixedly attached to the spindle 10 of said throttle valve. The mixing chamber communicates through openings 11, 11 with the atmosphere, and is provided with a nozzle 12, which is connected by a pipe 13 with the float chamber 14 of the carbureter. The supply of liquid hydrocarbon fuel is conducted through a pipe 15 to an opening 16 in the bottom of said float chamber, and is controlled by a needle valve 17, which is operatively connected by levers 18, 18 with the float 19 in the chamber 14. The levers 18 are fulcrumed at 20 to the cover 21 of the float chamber, the ends 22 being pivoted to the float, and their other ends 23 engaging a collar 24 upon the needle valve 17.

The operation of this device is well known, and it should be noted that the attachment hereinafter to be described can be used in connection with other types of carbureters just as well, the one described being disclosed only for purposes of illustration.

The attachment is denoted by the numeral 25, and comprises a cylindrical casing 26, attached to the inlet pipe 3. The inlet pipe communicates through an opening 27 therein, which registers with an opening 28 in the bottom of the casing, with the interior of the latter. The casing is provided with a cover 29, having an opening 30, and a nipple 31, to which leads a pipe 32 from a supply of oil, which is thus adapted to flow through a passage 33 in the casing to the interior thereof to lubricate the piston in the casing. The casing is lined with a bushing 34, the bottom 35 of which has openings 36. Upon the bottom 35 is centrally arranged a vertical tubular guide 37, the bore of which is engaged by a tubular extension 38 of a piston 39, which is adapted to reciprocate in the casing 26. A spring 40 is arranged within the tubular extension 38, its lower end being attached to said tubular extension and its upper end to a screw threaded spindle 41, which meshes with the screw threads of a hole 42 in the cover 29. By means of this arrangement the tension of the spring 40 may be varied according to the requirements. A spring 43 is coiled around the guide 37 and projects above the

surface of the same, to prevent the piston from being drawn against said guide, and a spring 44, arranged between the cover 29 and the piston 39, serves to diminish the force of the blow of the piston against the cover 29 in case of a back fire in the cylinder of the engine.

A plurality of holes 45, 45 are provided in the casing 26 and the lining 34 above the lower edge 46 of the piston, when the latter is in its normal position, and serve to release the pressure within the casing in case of a back fire in the cylinder of the engine, when, as hereinbefore stated, the piston 34 will be forced against the action of the spring 44 toward the cover 29 of the casing, and thereby uncovers the openings 45, 45.

The operation of the device is as follows: When suction occurs in the inlet pipe 3 of the engine, air will be drawn through the openings 11 into the mixing chamber and will rush up past the nozzle 12, whereby a certain amount of fuel will be drawn out depending upon the volume of air passing said nozzle. At the same time the piston 39 will be drawn against the action of the spring 40 toward the bottom of the casing 26. As soon as the suction ceases, the spring 40 will draw the piston 39 upward toward the cover 29, which movement will induce a flow of air through the openings 11 into the mixing chamber past the nozzle 12, carrying along with it a certain amount of fuel into the casing 26. At the next suction stroke the mixture in the casing 26 is drawn into the cylinder or the crankcase, as the case may be, in addition to the mixture of hydrocarbon and air from the carbureter proper. The play now described is repeated during each cycle of operation within the cylinder of the engine.

It will be observed that the attachment is, in fact, a pump for producing, in coöperation with the mixing chamber of the carbureter, a suitable mixture of liquid hydrocarbon and air, which pump is actuated by suction produced by the working piston of the engine. It produces, however, a mixture at times when and as long as the suction in the inlet pipe ceases, or in other words at times when there is no production of mixture in the main carbureter of the engine.

The attachment serves also as a storage vessel, as it were, for a mixture of air and hydrocarbon, and this mixture is transferred to the cylinder of the engine when a combustible mixture flows from the main carbureter to said cylinder. As, however, the mixtures from the casing 26 and the main carbureter flow toward each other, it will be observed that they will be effectively mixed before passing to the motor so that a quick and effective combustion is assured therein.

The attachment increases, of course, the quantity of the combustible mixture flowing to the cylinders of the engine in the same manner as if there were two independent carbureters supplying a combustible mixture to the engine.

The uniformity of the mixture is influenced by this attachment for the reason that a too lean mixture passing from the carbureter at the beginning of the suction stroke of the working piston will be supplemented by the mixture stored in the casing 26, and a too rich mixture passing from the carbureter at the time of the most effective vacuum in the cylinder or in the crankcase of the engine will be made more proportionate when commingled with the mixture in said attachment.

It is obvious that, since the quality and quantity of the mixture is thus regulated and a complete combustion takes place in the cylinders of the engine, a quiet running of the engine will be the result, and that the walls of the cylinder of the engine will be kept clean as there are no loose carbon particles floating in the products of combustion.

The opening in the nozzle 12 can obviously be made smaller than in carbureters heretofore in use, for the reason that the time during which air rushes past the said nozzle is doubled by the attachment, consequently a fine spray of liquid hydrocarbon will issue from said nozzle, which can be easier and in a more effective way carbureted. This, of course, will result in a saving of fuel.

What I claim is:

1. In an internal combustion engine, the combination with a pipe for conveying a mixture of hydrocarbon and air to the engine, of the mixing chamber of a carbureter communicating therewith, a casing also communicating with said pipe, a partition movably arranged in said casing and adapted to reduce the space in said casing communicating with said pipe to a minimum by the suction produced in said pipe by the working piston of the engine, and means for returning said partition to its normal position when the suction in said pipe ceases, said casing being provided with a plurality of holes near to its upper end which are closed by said partition when the latter is in its normal upper position and uncovered by said partition to open a communication between said casing and the atmosphere when said partition is forced above its normal upper position.

2. In an internal combustion engine, the combination with a pipe for conveying a mixture of hydrocarbon and air to the engine, of the mixing chamber of a carbureter communicating therewith, a casing also communicating with said pipe, a partition movably arranged in said casing and adapted

to reduce the space in said casing communi-
cating with said pipe to a minimum by the
suction produced in said pipe by the work-
ing piston of the engine, and a spring for
5 returning said partition to its normal posi-
tion when the suction in said pipe ceases,
said casing being provided with a plurality
of holes near to its upper end which are
closed by said partition when the latter is
10 in its normal upper position and uncovered
by said partition to open a communication

between said casing and the atmosphere
when said partition is forced above its nor-
mal upper position.

Signed at Poughkeepsie, in the county of 15
Dutchess and State of New York, this 18th
day of May, A. D. 1911.

ALBERT IBER.

Witnesses:

WILLIAM C. ALBRO,
EARL HAWLEY.