H. W. HENES.

CARBURETING DEVICE FOR INTERNAL COMBUSTION ENGINES.

APPLICATION FILED JAN. 12, 1916.

1,280,463.

Patented Oct. 1, 1918.

2 SHEETS—SHEET 1.

Fig. 1.

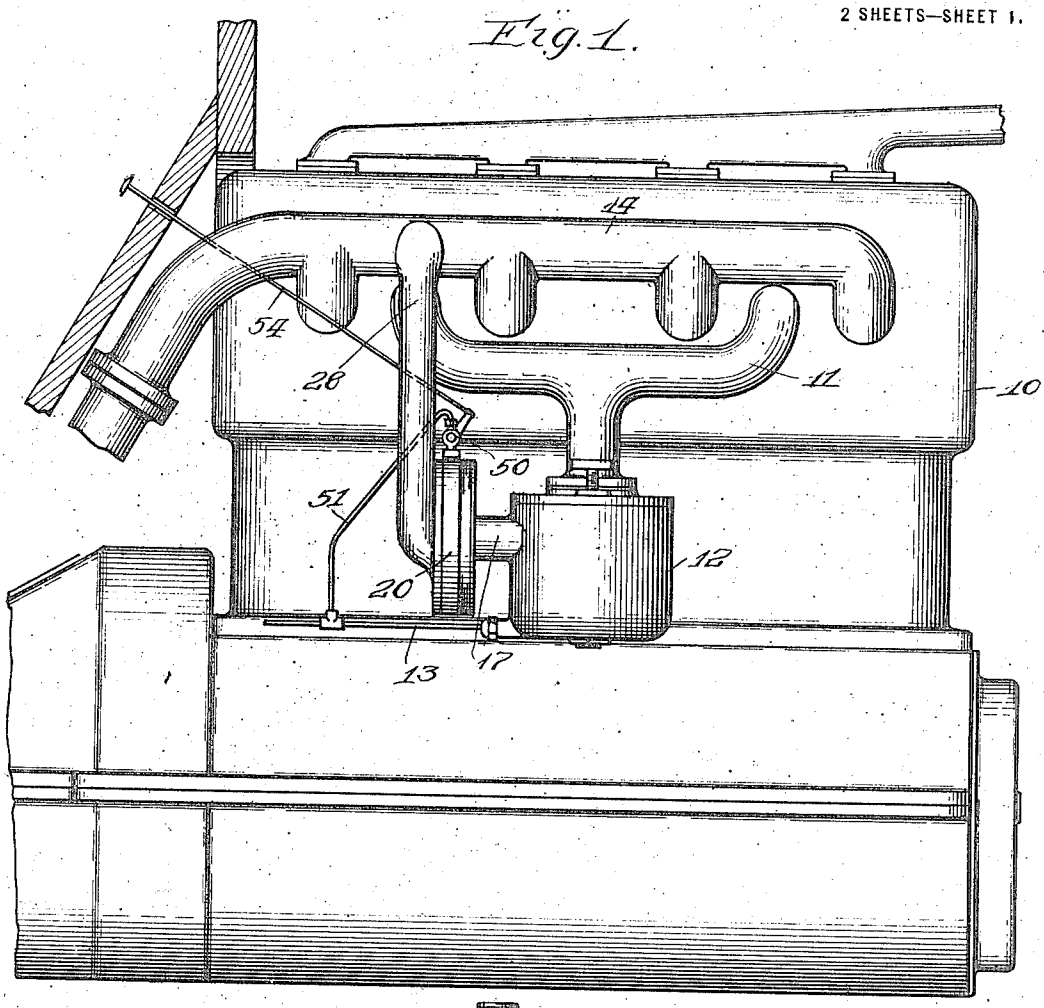
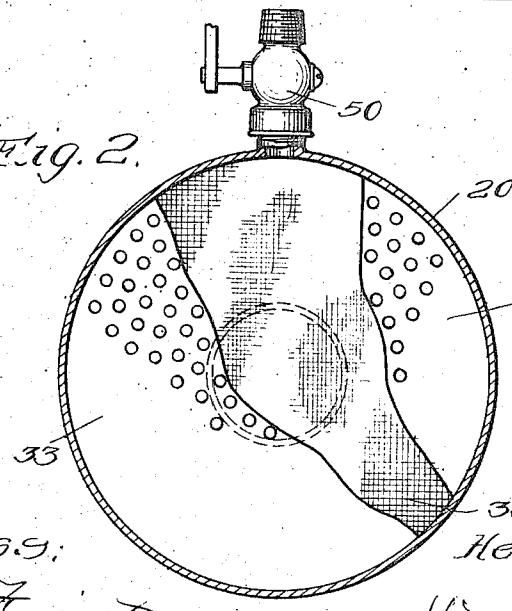


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

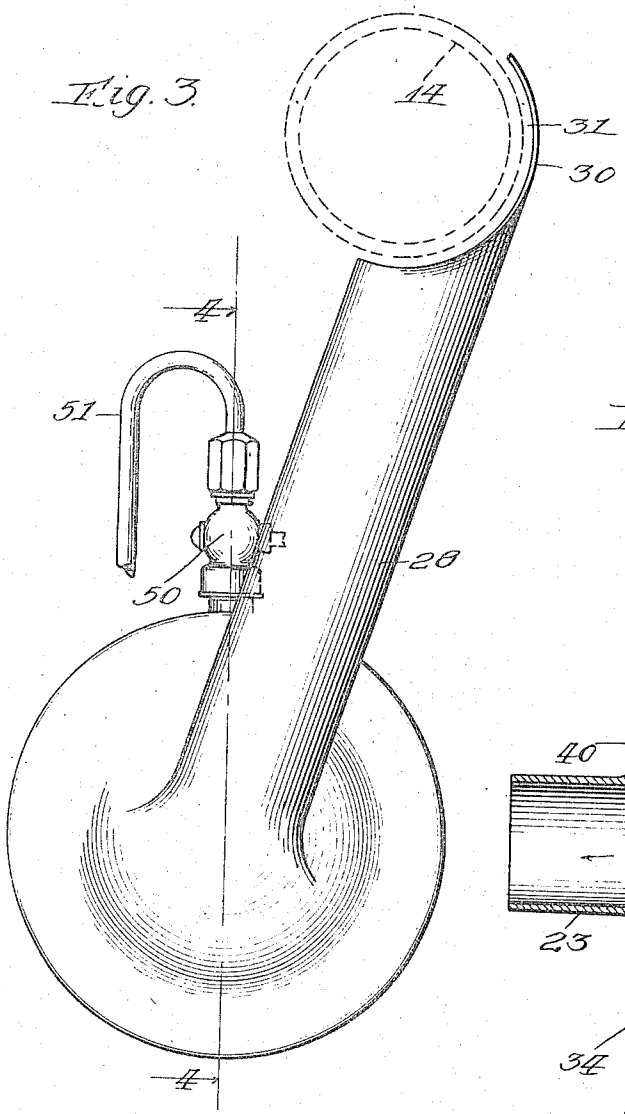


Fig. 4.

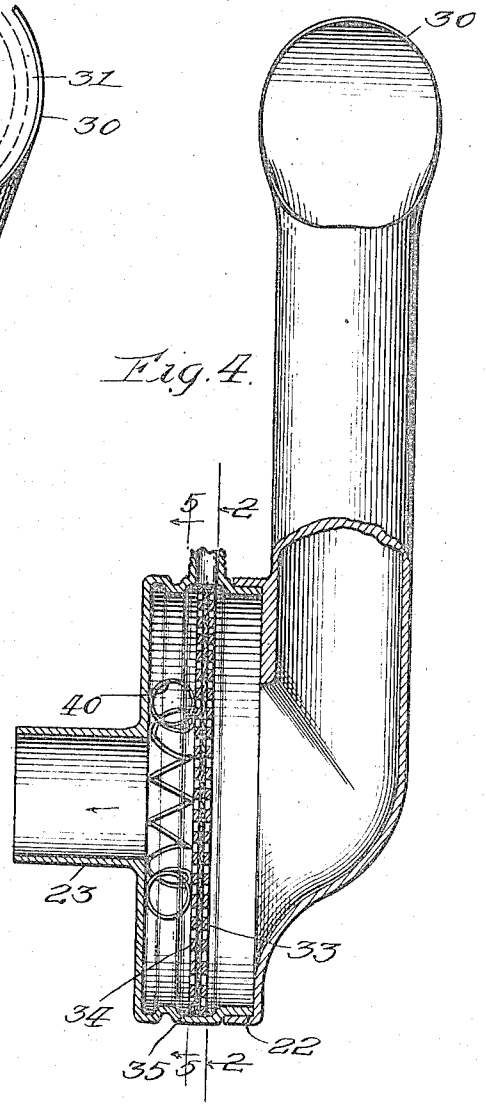


Fig. 5.

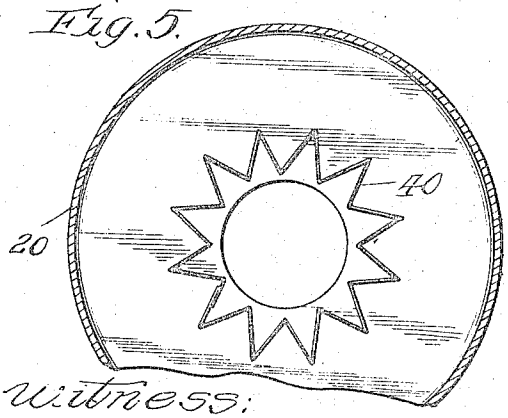
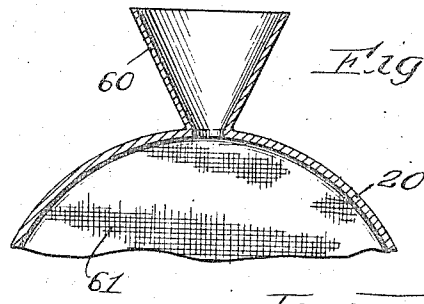


Fig. 6.



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CARBURETING DEVICE FOR INTERNAL-COMBUSTION ENGINES.

1,280,463. Specification of Letters Patent. Patented Oct. 1, 1918.

Application filed January 12, 1916. Serial No. 71,638.

To all whom it may concern:

Be it known that I, HENRY W. HENES, a citizen of the United States, residing at 462 Deming Place, in the city of Chicago, county of Cook, and State of Illinois, have invented new and useful Improvements in Carbureting Devices for Internal-Combustion Engines, of which the following is a specification.

This invention relates to improvements in carbureting devices for internal combustion engines and more especially to a device adapted to assist the ordinary carbureter with which such an engine is usually provided in the performance of its regular functions under extreme conditions such as starting a cold engine in a cold temperature; and also to improve the functioning of the carbureter in the regular running of the engine. To this end the device is adapted to be attached to the intake opening into the carbureter so that all of the entering air must pass through the device; and it includes means for providing an excess of fuel and vaporizing the latter and for carbureting the air by an intimate mixing of the fuel and the air for the starting operation, and means for filtering all the air entering the device for the regular operation of the engine. Other objects of the invention will appear from the further description hereinafter.

It is well known to all operators of gasolene internal combustion engines, and especially to the drivers of automobiles, that with the low test gasolene now commonly used great difficulty is generally experienced in starting and running the engines in cold weather, and that such starting can be greatly facilitated if means are provided for securing a rich and thoroughly carbureted mixture into the cylinders before an attempt is made to start the same. One of the objects of this invention therefore is to provide such means.

It is also well known that after a little running of such an engine the cylinders and pistons become fouled by a deposit on their walls, and on analysis it is found that this deposit is composed partly of carbon, but in large part of dirt which is drawn into the engine through the air intake opening and passages. This invention, therefore, also includes means for screening such opening to exclude dirt, and in addition it is found that by the better vaporization and carbureting of the mixture secured by such device the deposit of carbon is considerably lessened so that the effectiveness of the engine is increased by this means also.

A device embodying the principles of the invention is shown in the accompanying drawings in which;

Figure 1 is a view of an engine in side elevation showing the carbureter and related parts with my improved device attached thereto.

Fig. 2 is a radial section through the device on the line 2—2 of Fig. 4, with parts broken away.

Fig. 3 is a view showing the device in side elevation.

Fig. 4 is a radial section on the line 4—4 of Fig. 3.

Fig. 5 is a radial section on the line 5—5 of Fig. 4.

Fig. 6 is a fragmentary view similar to Fig. 2 but showing a modified form of the device.

As shown in said drawings, in Figs. 1 to 5 inclusive, an automobile engine of approved form is illustrated in elevation in Fig. 1, including a set of cylinders 10 with an intake manifold 11, a carbureter 12 with a fuel pipe 13 leading thereto, and an exhaust manifold 14; all of these parts being of well known form and their particular design, construction or arrangement constituting no part of the present invention. As commonly arranged also the carbureter 12 is fitted with an air intake pipe or tube leading to the proximity of the exhaust pipe 14 for the purpose of conducting warm air to the carbureter, such a tube being constructed in a variety of forms and being ordinarily easily detachable from the carbureter; and as here illustrated it is omitted from the engine and its place supplied by the devices hereinafter described. The air intake opening into the carbureter is provided with a short neck or tube 17 to which the warm air pipe is ordinarily joined.

For the purpose of securing an enriched fuel mixture and better vaporization and carburetion, especially in the starting operation, I have provided the auxiliary carbureting device indicated, and the latter comprises a casing 20 here shown as cylindric in form and of a diameter greatly exceeding the diameter of the intake passage 17 into the carbureter, but of any convenient length, which is joined to the tube 17 in axial alinement therewith. The cylindric casing is made in two parts which simply telescope to-

gether like the lid upon a box, as indicated at 22 (Fig. 4), and one half is made with a short tube 23 opening into its center and adapted to telescope into the tube 17; while the other half of the casing is made with a larger opening through its circular head communicating with a large bent air intake pipe or tube 28 arranged to extend into the proximity of the exhaust pipe 14. This tube is provided at its free end with a large flared opening 30 shaped to partially encircle the pipe 14, but leaving a space 31 (Fig. 3) for the entrance of air warmed by the proximity of the heated exhaust pipe. It is intended therefore that the air supply to the engine shall enter through the intake pipe 28, passing through the cylinder 20 and thence into the carbureter 12; and within the cylinder 20 is placed a screen comprising two circular disks 33 and 34 which may be made of perforated metal or of woven wire or equivalent construction, with a circular piece of cloth or similar fabric 35 between them. By this means there is formed a dividing partition in the cylinder 20, but as the cloth screen 35 permits of the passage of air through it and as it is made of such diameter as to present an area many times greater than the area of the intake passage 17, its resistance to the passage of air through it is not enough to impose a material throttling effect upon the engine or to offset the advantages of the device. The partition is held in place by forming the cylindric casing with two annular ribs pressed into its wall and springing the metal disks into place within the cylinder between these ribs (Fig. 4). In order to prevent the suction of the engine from drawing the middle part of the circular partition against the outlet opening 23 and thus obstructing the passage of air through the device, there is interposed between the outlet side of the partition and the adjacent circular end wall of the cylinder a piece of wire 40 coiled in the form of a helical spring and then curved around in a circle with its ends brought together as shown.

In the top of the cylinder 20 is made an opening immediately over the cloth disk 35, and to the cylinder wall at this point is fitted a valve 50 with a length of fuel pipe 51 joined to it and to the fuel pipe 13, by means of which fuel may be fed into the device to saturate the cloth disk 35. For convenience in operation a long rod 54 joined to the valve arm of the valve 50 may lead to a point convenient to the operator's reach, as here shown.

In the operation of the device, the valve 50 may be opened to admit gasolene or other liquid fuel into the cylinder 20, where it will saturate the cloth 25; and in the subsequent turning over of the engine for the purpose of setting it into operation, the suction of the pistons will draw air through the cloth and supply an enriched mixture for the purpose of starting. As soon as the engine has started and is in proper operation, the valve 50 can be closed and in the subsequent running of the engine all of the air in the carbureter 12 is screened and a very considerable amount of dirt thus excluded from the cylinders. In addition it is found that the slight amount of resistance offered by the cloth disk 35 to the passage of air through the device will tend to equalize the flow of air through the carbureter and lessen the periodicity of operation of the same which is described as "jerking" and is wasteful of fuel. It is found also that when the engine is stopped after a run long enough to warm it somewhat the partition 35 will confine a considerable volume of warm air in the engine cylinders and in the intake manifold 11 with the communicating air passages in the carbureter and the cylinder 20, so that after the engine has stood idle for a considerable length of time in the cold its subsequent starting is facilitated even without the addition of enriching fuel through the valve 50.

In Fig. 6 is illustrated a form of the device in all respects similar to that above described except that in lieu of the valve 50 with the fuel supply pipe 51, there is provided a simple funnel 60 joined to the top of the cylinder so that a small amount of fuel can be poured through the funnel and upon the cloth disk 61 within it; the latter and all other parts of the device being made exactly the same as those above described.

I claim as my invention:

The combination with an internal combustion engine having a carbureter and an air intake passage thereinto, of an auxiliary carbureting device joined to such air intake passage and comprising a substantially cylindric casing of larger diameter than such air intake passage and made in two parts, one part telescoping into the other to permit their ready separation, an air inlet opening into one side of the casing and an opening through the opposite side connected to the carbureter air intake passage, a removable perforated dividing partition in the casing between the two openings, and an opening into the top of the casing above the partition whereby liquid fuel may be supplied to wet the partition.

In witness whereof, I have hereunto subscribed my name this 4th day of January 1916.

HENRY W. HENES.