C. H. STINSON.

DUST COLLECTOR FOR CARBURETERS.

APPLICATION FILED JULY 2, 1917. RENEWED SEPT. 8, 1919.

1,339,609. **Patented May 11, 1920.**

Fig. 1.

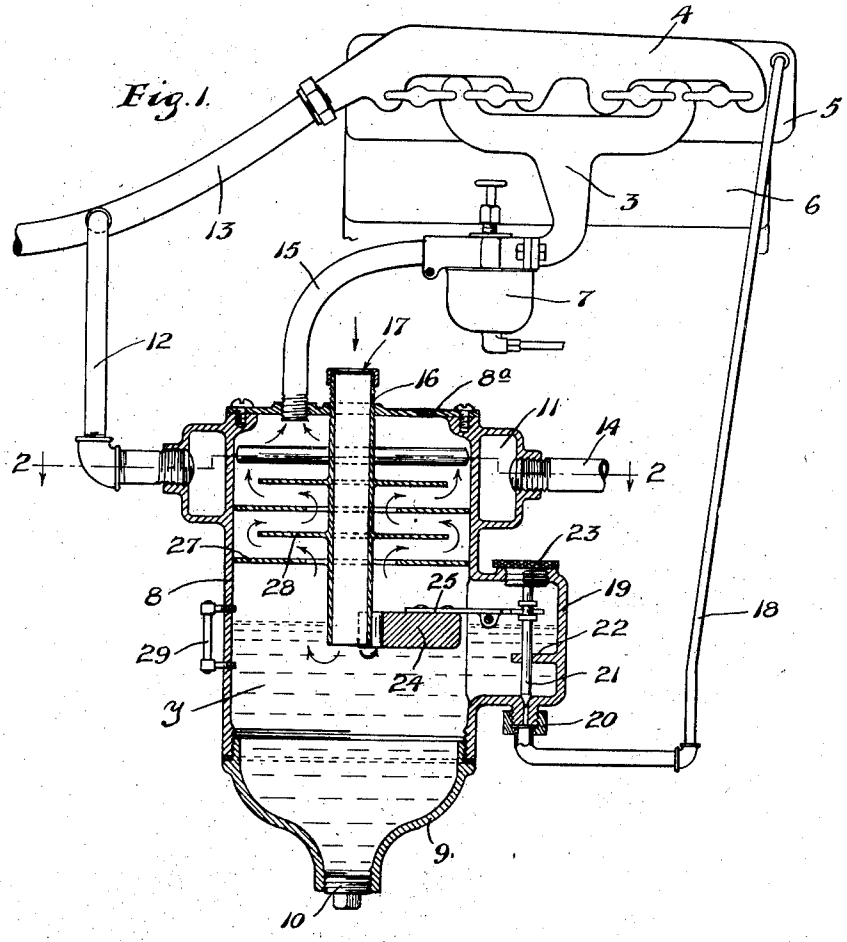
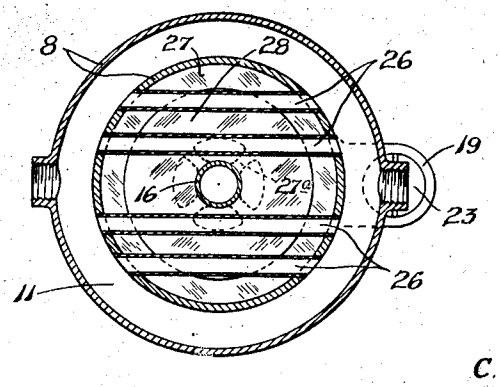


Fig. 2.



WITNESSES
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DUST-COLLECTOR FOR CARBURETERS.

1,339,609. Specification of Letters Patent. Patented May 11, 1920.

Application filed July 2, 1917. Serial No. 178,120. Renewed September 8, 1919. Serial No. 322,398.

To all whom it may concern:

Be it known that I, CHARLES H. STINSON, a citizen of the United States, residing at Superior, in the county of Douglas and State of Wisconsin, have invented certain new and useful Improvements in Dust-Collectors for Carbureters; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has for its object to provide a simple and efficient device or attachment for carbureters, whereby all dirt and dust will be removed from the air before it enters the carbureter on its way to the cylinders of an explosive engine.

It is a well known fact that the dust and dirt carried with the carbureted air into the cylinders of explosive engines, not only grinds and cuts the same, but works its way into the lubricating oil and thereby decreases the efficiency thereof and sometimes entirely destroys the lubricating action. This is especially so in the use of explosive engines on tractors which are necessarily used where dirt and dust in great quantities will mix with the air taken into the carbureter. In my experience in the use of tractors driven by explosive engines, I have frequently found that the dirt worked into the lubricating oil between the piston and cylinder, would accumulate until the entire body of the lubricating oil was turned into a pasty mass which would not lubricate at all. When this happens, the engine, of course, runs dry and rapidly cuts itself to pieces.

My improved dust collector for carbureters involves means for washing the air and thereby collecting the dust therefrom, before it is taken into the carbureter, but the invention also involves other important features of construction, as will hereinafter appear.

The invention is illustrated in the accompanying drawings wherein like characters indicate like parts throughout the several views. Referring to the drawings,

Figure 1 is a view partly in vertical section and partly in diagram; and

Fig. 2 is a horizontal section on the line 2—2 of Fig. 1.

In Fig. 1, the explosive engine and parts thereof are diagrammatically shown in plan view while the carbureter is shown in elevation and the dust collector in vertical section, this being done for illustrative purposes, but it will, of course, be understood that the explosive engine will, and preferably would stand in an upright position. Also, in Fig. 1, the explosive engine is shown on a reduced scale as compared with the carbureter and dust collector.

Of the parts of the engine, it is only desirable for the purposes of this case to particularly note the intake manifold 3, the exhaust manifold 4, the water jacket chamber 5 and cylinder casting 6. The carbureter, which is of the usual or any suitable construction, is indicated, as an entirety, by the numeral 7 and delivers to the intake manifold 3 in the customary way.

The dust collector is preferably made with an upright cylindrical body channel 8 having a contracted bottom section 9 with a drain passage normally closed by a plug 10. The upper portion of the channel 8 is formed with a surrounding chamber 11 that is connected by a pipe 12 to the main exhaust pipe 13, which latter leads from the exhaust manifold. At that side opposite to the point of attachment to the exhaust of the branch exhaust pipe 12, the chamber 11 has an extended exhaust pipe 14. With this arrangement, part of the exhaust products of combustion will be forced through the chamber 11 and will thereby heat the upper portion of the channel 8, for the purpose of superheating the cleaned air taken into the carbureter.

The top of the channel 8 is connected to the carbureter 7 by an air intake pipe 15. Outside air is drawn into the shell 8 through an axial air intake tube 16 shown as rigidly secured to a detachable cover 8^a of said shell. Here it may be noted that the lower end of air pipe 15 is, as shown, also directly attached to said cover. The upper end of the air intake tube 16 is covered by a wire gauze 17 which will prevent large particles of dirt from entering the dust collector.

The dust collecting chamber formed within the shell 8 contains water y to a lever that is above the lower end of the air intake tube 16, so that all air drawn into the said shell will be passed through the water and washed, or, in other words, collected in the water. The level of the water in the said dust collecting chamber is preferably auto-

matically maintained as follows: The numeral 18 indicates a small water tube that leads from the water chamber or jacket 5 of the engine and opens into a laterally bulged pocket 19 of the shell 8, being coupled to a depending nipple thereof by a union 20. The said nipple 20 is axially perforated and formed with a needle valve seat that is adapted to be opened and closed by a vertically movable needle valve 21. This needle valve 21, as shown, is guided by a lug 22 on the pocket 19 and, at its upper end, is guided by a plug 23 screwed into the top of the said pocket. The needle valve 21 is automatically operated by a float 24 carried by a small lever 25 that is intermediately pivoted to the side walls of the pocket 19. With this arrangement, when the level of the water y lowers, valve 21 will be opened and allow water to flow into the dust collecting chamber until the altitude of the water is restored and, thereupon, the said needle valve will be automatically closed by the said float. Here it should be stated that in practice, the dust collecting chamber will be located below the point of connection of the water pipe 18 to the water chamber 5, so that water will flow by gravity from said chamber 5 into the said dust collecting chamber.

To further increase the efficiency of the heating device for the dust collecting chamber formed within the shell 8, a plurality of flues 26 are passed through the upper portion thereof, in a direction parallel to the line drawn from the delivery end of pipe 12 to the receiving end of pipe 14. Obviously, with this arrangement, the cleaned air, passing upward to the carbureter must pass around or in contact with the flues 26, so that it will be superheated, as well as cleaned. This superheating of the air will increase the vaporizing action in the carbureter, and hence, adapts the carbureter to use low grade hydrocarbons, such as kerosene.

Below the flues 26, baffle plates or flanges 27 and 28 are arranged in overlapping relation, so that the air, in passing upward must take a zigzag course, as indicated by arrows on Fig. 1. The said baffle plates 27 are of annular form, but have radial arms 27^a that connect the same to the tube 16. The baffle plates 28, are also secured to and supported by the said tube 16 and terminate short of the shell 8. These so-called baffle plates 27 and 28 serve to conduct heat from the shell 8, and hence, serve also as radiating fins.

When the water in the dust collecting chamber accumulates considerable dirt, the plug 10 is removed, thereby permitting the soiled water to rapidly run out and the chamber 7 flushed and then refilled with water, after the plug has been again replaced. The numeral 29 indicates a water gage applied to one side of the shell 8.

What I claim is:

The combination with an explosive engine having an intake manifold and an exhaust manifold, of a carbureter connected to the said intake manifold, a dust collecting chamber adapted to contain water, an air intake tube delivering air into said dust collecting chamber below the water level thereof, a clean air tube leading from said dust collecting chamber to said carbureter, an annular chamber surrounding a portion of said dust collecting chamber and having an exhaust passage, flues extending from one side to the other of said annular chamber through the upper portion of said dust collecting chamber, and a connection from said exhaust manifold to said annular chamber for delivering a part of the exhaust therethrough.

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

CHARLES H. STINSON.

Witnesses:

CLARA DEMAREST,

B. G. BAUMANN.