E. SIBLEY.

FUEL HEATER FOR EXPLOSIVE ENGINES.

APPLICATION FILED NOV. 19, 1913.

1,115,745. Patented Nov. 3, 1914.

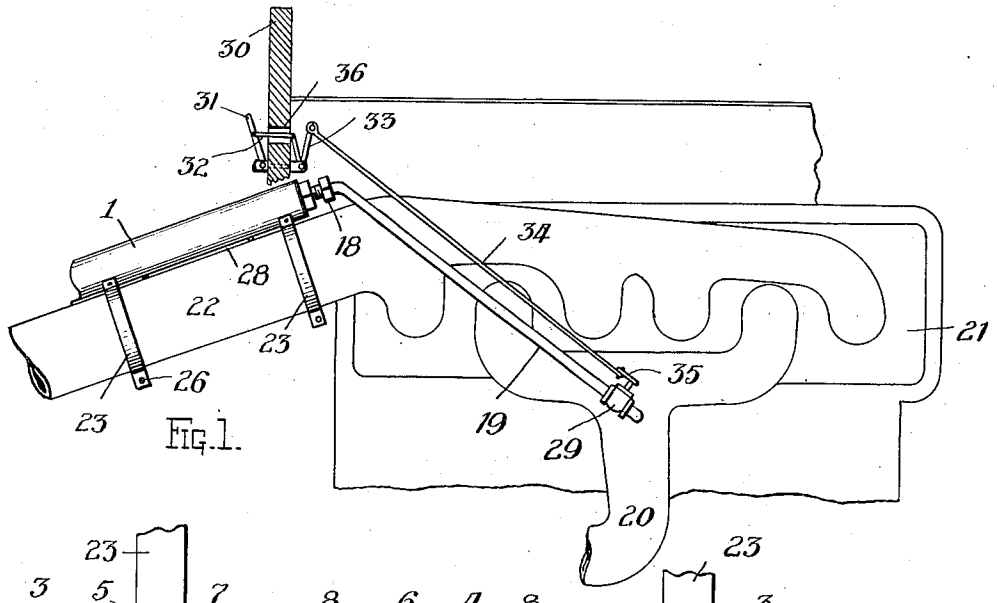

FIG. 1.

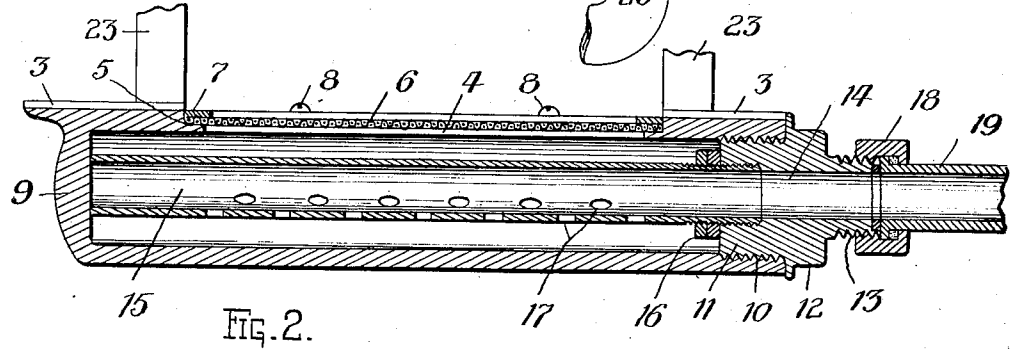

FIG. 2.

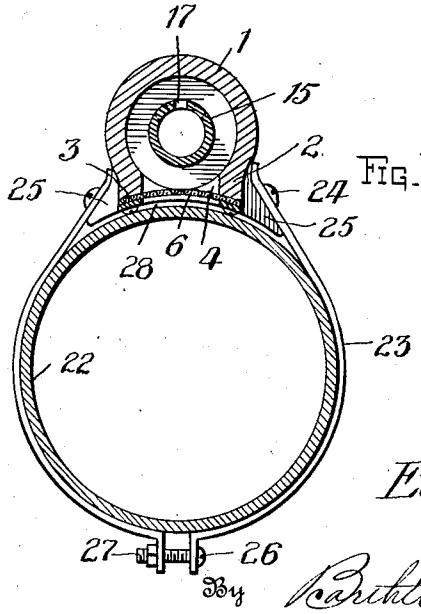

FIG. 3.

Witnesses

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UNITED STATES PATENT OFFICE.

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FUEL-HEATER FOR EXPLOSIVE-ENGINES.

1,115,745. Specification of Letters Patent. Patented Nov. 3, 1914.

Application filed November 10, 1913. Serial No. 801,800.

To all whom it may concern:

Be it known that I, EUGENE SIBLEY, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Fuel-Heaters for Explosive-Engines, of which the following is a specification, reference being had therein to the accompanying drawings.

In connection with internal combustion engines it has been found that by admitting heated air to the intake tube or manifold of the engine that the efficiency of the same is materially increased. The efficiency may be defined, *inter-alia*, as eliminating "skipping" or "misfiring," insuring perfect combustion, and increasing the mileage per gallon of gasolene.

To this end, my invention aims to provide a simple, durable and inexpensive air heating apparatus that can be easily and quickly installed upon the exhaust manifold of the engine or any other heated surface thereof, the apparatus being connected to the intake tube or manifold of the engine to supply heated air to the vapor before entering the cylinders of the engine. Provision is made for controlling the supply of heated air to the intake tube, also to preclude any possibility of foreign matter being carried into the intake tube by the heated air.

My invention will be hereinafter specifically described and then claimed, and reference will now be had to the drawing, wherein—

Figure 1 is a side elevation of the heating apparatus as applied to a conventional form of internal combustion engine; Fig. 2 is an enlarged longitudinal sectional view of a portion of the apparatus; and Fig. 3 is an enlarged cross sectional view of the same as applied to the exhaust pipe or manifold of the engine.

In describing my invention by aid of the drawing above referred to I desire to point out that I intend said view as merely illustrative of an example whereby my invention may be applied in practice, and I do not limit my claims to the precise arrangement and construction of parts indicated. The following description is therefore to be construed broadly as including substitute arrangements and constructions which are the obvious equivalent of those shown.

In the drawing, 1 denotes a cylindrical hollow casing having the outer side thereof provided with a longitudinal enlargement extending from one end of said casing to the opposite end thereof. The enlargement 2 has a concave side 3 and a longitudinal slot 4. The walls of the slot 4 are chamfered or cut away, as at 5 to provide a seat for a screen 6, which is preferably made of interwoven wire of fine mesh. The screen 6 is retained upon its seat by a rectangular frame 7 secured to the enlargement of the casing by screws 8 or other fastening means, the heads of the screws serving as facing elements, as will hereinafter appear.

One end of the casing 1 is closed by a wall 9 and the opposite end of said casing has the walls of the bore thereof screw-threaded, as at 10 to receive a plug 11. The outer end of the plug 11 is provided with a nut 12 and an exteriorly screw-threaded nipple 13. The plug 11 has a concentric longitudinal opening 14 in communication with the bore of the casing 1 and the inner end of the opening 14 is screw-threaded to receive the screw-threaded end of an adjustable tube 15, which extends longitudinally of the casing 1 and contacts with the wall 9 thereof as best shown in Fig. 2. The tube 15 is adjustably held relatively to the plug 11 by nuts 16 screwed upon said tube against said plug, and said tube is provided with longitudinal rows of spaced apertures 17, the apertures of one row being staggered relatively to the apertures of an adjoining row. Through the medium of the nuts 16 and the plug 11, the tube 15 is positioned with the apertures 17 thereof confronting the closed wall of the casing 1, that is, the wall opposite slot 4, whereby it will be necessary for air admitted through the slot 4 to travel around the bore of the casing in order to enter the apertures 17 of the tube 15. This arrangement of the tube 15 relatively to the casing is essential for two reasons, namely, in order that the air entering the casing will be baffled and retarded before entering the tube 15, and also in order that the air may be heated by the walls of the casing.

Connected to the nipple 13 by a conventional form of union or coupling 18 is an end of a pipe or tube 19, said tube having the opposite end thereof connected to the intake tube or manifold 20 of an internal

combustion engine 21, which has been diagrammatically illustrated as the ordinary type used in connection with automobiles.

As illustrated in Fig. 1, the casing 1 is mounted upon the exhaust pipe or manifold of the engine 21, and as a suitable fastening means, I employ straps 23, said straps having the ends thereof connected by screw 24 or other fastening means to lugs 25, carried by the casing adjacent to the ends thereof. The opposite ends of the straps 23 are connected together by screws 26 and nuts 27, and with said straps embracing the exhaust pipe 22, the heads of the screws 8 are held in engagement with the outer side of the exhaust pipe and thereby space the casing 1 relatively to the exhaust pipe and provide an air gap 28, which is best shown in Fig. 3. With the slot 4 contiguous to the periphery of the exhaust pipe 22 it is necessary for air to contact with the exhaust pipe before passing through said slot into the casing, consequently the air is heated as it passes into the casing and then again by the walls of the casing.

To control the supply of heated air to the intake tube or manifold 20, the tube or pipe 19 is provided with an ordinary valve 29 located in proximity to the intake tube to prevent any back pressure in the pipe or tube 19. The valve 19 can be operated by hand or foot from the dash board 30 of an automobile by any suitable mechanism. For instance, one side of the dash board 30 has a pivoted operating lever 31 pivotally connected by a link 32 to a pivoted bell crank 33, carried by the opposite side of the dash board. The bell crank 33 is connected by a reach rod 34 to the crank 35 of a valve stem forming part of the valve 29. The link 32 extends through an opening 36 provided therefor in the dash board 30, and as shown, the valve 29 is open admitting heated air to the intake tube or manifold 20 of the engine 21.

What I claim is:—

1. A heating apparatus comprising a casing adapted to be mounted upon a heated surface, said casing having a longitudinal slot formed therein adapted to admit air thereto, and means extending longitudinally of said casing and adapted to receive air at the side of said casing opposite the slotted side thereof, said means constituting an air outlet and adapted to baffle air admitted to said casing.

2. An air heating apparatus comprising a casing adapted to be secured exteriorly of a heating element and longitudinally thereof, said casing having a closed end and a longitudinal slot adapted to admit air to said casing, and means carried by the other end of said casing and extending longitudinally therein and adapted to receive air at the side of said casing opposite the slotted side thereof, said means constituting an air outlet at the supported end thereof.

3. An exposed air heating apparatus comprising a casing having a closed end and a longitudinal slot providing an air inlet to said casing, a plug carried by the opposite end of said casing and provided with an air outlet, and apertured means carried by said plug and extending longitudinally of said casing and engaging the opposite end of said casing and adapted to baffle air admitted through the slot of said casing.

4. An air heating apparatus comprising a casing adapted to be mounted upon a heated surface and spaced therefrom, said casing having a longitudinal slot formed therein to admit air thereto, a screen mounted over the slot of said casing, and an apertured air outlet tube arranged concentrically of said casing and adapted to baffle air admitted thereto.

5. In an exposed air heating apparatus, a casing adapted to receive heated air, an apertured tube arranged longitudinally of said casing and adapted to baffle air admitted thereto, and means exteriorly of said casing for controlling the outlet of air therefrom.

6. The combination with a heating medium, of a casing adapted to be secured thereto in spaced relation to said medium and provided with an opening extending longitudinally of said heating medium and adapted to receive air, an apertured tube arranged longitudinally of said casing and adapted to discharge heated air at one end of the casing.

7. A heating apparatus comprising a casing adapted to be mounted upon a heated surface, said casing having a slot formed therein adapted to admit air thereto, and means within the said casing closed at one end by said casing and providing an air outlet at the opposite end thereof and adapted to baffle air admitted to said casing.

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

EUGENE SIBLEY.

Witnesses:
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