Nov. 4, 1924. 1,513,732

L. J. BALL

VAPORIZER

Filed June 8, 1923 2 Sheets-Sheet 1

Fig. 1.

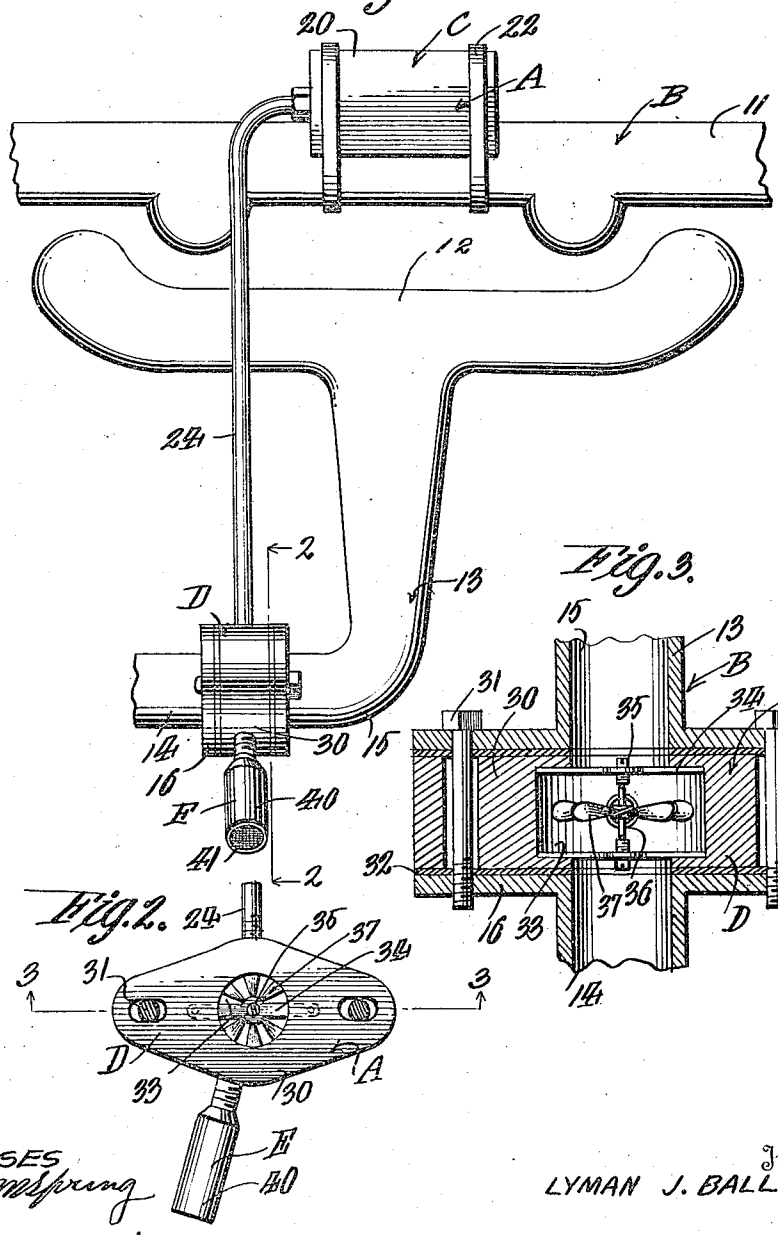


Fig. 3.

Fig. 2.

WITNESSES

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Fig. 4.

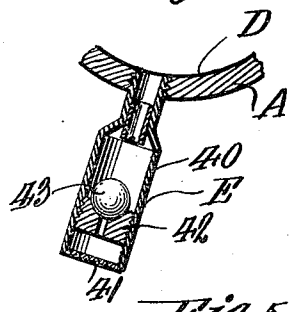


Fig. 5.

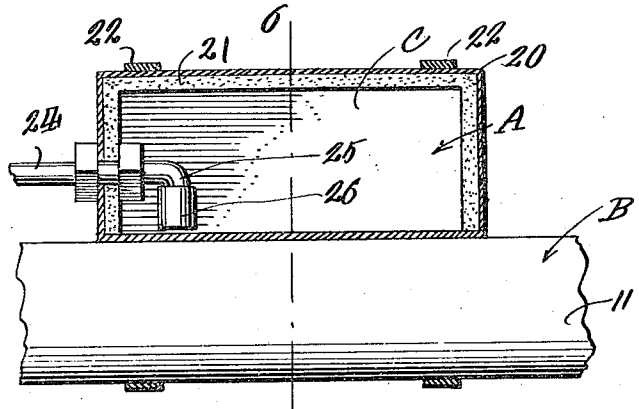
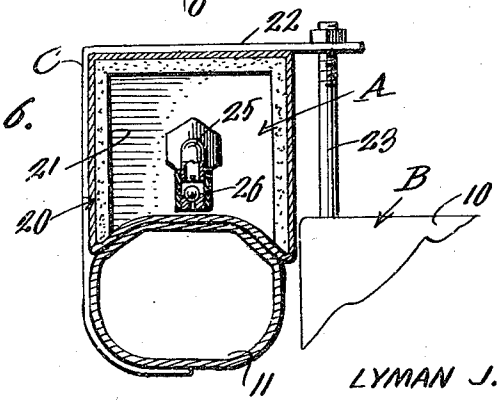


Fig. 6.



WITNESSES

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Patented Nov. 4, 1924. 1,513,732

UNITED STATES PATENT OFFICE.

LYMAN J. BALL, OF NORTH SYRACUSE, NEW YORK, ASSIGNOR OF ONE-HALF TO DONALD H. OAKES, OF SYRACUSE, NEW YORK.

VAPORIZER.

Application filed June 8, 1923. Serial No. 644,195.

To all whom it may concern:

Be it known that I, LYMAN J. BALL, a citizen of the United States, residing at North Syracuse, in the county of Onondaga and State of New York, have invented certain new and useful Improvements in a Vaporizer, of which the following is a specification.

This invention appertains to attachments for internal combustion engines and the primary object of the present invention is to provide an improved device for internal combustion engines which will facilitate the starting of the motor and effectively break up the fuel into small particles and vaporize the same prior to the entrance thereof into the intake manifold, thereby effectively aiding in the operation of the motor.

Another prime object of the invention is to provide an improved attachment for internal combustion engines embodying a heater connected with the exhaust pipe of the engine, a vaporizing element incorporated with the intake pipe between the manifold and carburetor for withdrawing hot air from the heater, and a novel fan disposed in the vaporizer for effectively mixing the hot air with the fuel charge for vaporizing the same and for breaking up the fuel charge into minute particles.

A further prime object of the invention is the provision of an air valve connected with the vaporizer for insuring the proper amount of air being taken into the motor and mixed with the charge, the charge being also heated by contact with the walls of the generator.

A still further object of the invention is to provide an improved attachment for internal combustion engines of the above character, which will be durable and efficient in use, one that will be simple and easy to manufacture and one which can be placed upon the market at a reasonable cost.

With these and other objects in view, the invention consists in the novel construction, arrangement and formation of parts, as will be hereinafter more specifically described, claimed and illustrated in the accompanying drawings, in which drawings:

Figure 1 is a side elevation of the improved attachment, showing the same incorporated with an internal combustion engine.

Figure 2 is a detail section taken on the line 2—2 of Figure 1 looking in the direction of the arrows.

Figure 3 is a section taken on the line 3—3 of Figure 2 looking in the direction of the arrows.

Figure 4 is an enlarged detail section illustrating the air valve carried by the generator.

Figure 5 is an enlarged fragmentary section taken through the heater portion of the attachment illustrating the means of connecting the same to the exhaust manifold, and

Figure 6 is a transverse section through the heater and exhaust manifold taken on the line 6—6 of Figure 5.

Referring to the drawings in detail, wherein similar reference characters designate corresponding parts throughout the several views, the letter A generally indicates the improved attachment and B an internal combustion engine with which the same can be associated.

The internal combustion engine B can be of any preferred character or make and as shown, includes a cylinder block 10, the exhaust manifold 11, the intake manifold 12 and the intake pipe 13 leading from a suitable carburetor (not shown). The intake pipe 13 preferably consists of inner and outer sections 14 and 15 which are provided with facing flanges 16, between which are adapted to be received a portion of the improved device A, which will be now described.

The improved attachment A comprises essentially a heater C and a generator D.

The heater C comprises a casing 20 which is preferably provided with a lining 21 formed of some insulating material. The inner wall of the casing 20 is shaped to receive the exhaust manifold 11 and it can be seen that this wall is adapted to make a snug fit with the said manifold. The heater can be connected with the manifold in any preferred manner and as shown, straps 22 are provided for this purpose and these straps can be connected to bolts 23 carried by the cylinder block 10. A hot air outlet pipe 24 communicates with one end of the heater and is extended to the generator D and communicates therewith. The inner end of the pipe 24 terminates in an angular section 25, which carries an intake valve 26, which is

disposed in relative close proximity to the exhaust manifold 11.

The generator D consists of a block 30 which is disposed between the flanges 16 and the block is held in place by suitable bolts 31 extending therethrough and through the flanges 16. If so desired suitable gaskets 32 can be placed between the block and the flanges.

A chamber 33 is formed centrally within the block 30 and communicates with the bore of the intake pipe 13. The pipe 24 communicates with the chamber 33 and supplies hot air thereto. Suitable supporting straps 34 are arranged within the chamber and carry bearings 35 which are arranged in axial alignment with the bore of the intake pipe 13. A shaft 36 is rotatably carried by the bearings 35 and this shaft carries a propeller or mixing wheel 37. The propeller is adapted to be operated by the suction set up in the intake pipe 13 and serves as means for breaking the charge from the carbureter into small particles and for thoroughly mixing the same with hot air taken into the chamber from the pipe 24, which tends to vaporize the same. The hot air from the pipe 24 also heats the walls of the chamber and the charge coming in contact with the walls of the chamber will be rendered into a gas.

In order to supply additional air to the mixture I provide an air valve E which embodies a housing 40 communicating with the chamber 33. One end of this housing is left open and provided with a screen 41 for preventing the sucking in of dirt and the like into the chamber. A valve seat 42 is arranged within the housing 40 and a ball valve body 43 will be unseated when suction is set up in the chamber 33. The air taken into the valve E will of course also be heated by the hot air taken in from the heater C.

In view of the fact that the charge is vaporized in the chamber 33, a less amount of gasoline is needed, which of course will save on the total amount of gasoline used.

The vaporizing of the charge and the mixing thereof with hot air will form a perfect mixture, which will not only give greater power to the engine, but will also reduce the forming of carbon therein.

In view of the fact that the heater C is provided with an insulated lining, the air contained therein will be kept warm for a considerable length of time even after the engine is stopped and thus when the engine is started again, a warm supply of air will be admitted to the chamber 33, which will facilitate the starting of the engine.

Changes in details may be made without departing from the spirit or the scope of this invention.

What I claim as new is:

In an attachment for an internal combustion engine, a solid block adapted to be incorporated with the intake pipe of the engine having a longitudinal way therethrough and an enlargement in the way defining a chamber, bracket plates secured to the end walls of the chamber and extending diametrically across the same, aligned bearings adjustably carried by the brackets, and a propeller rotatably mounted in the chamber having its axis disposed in parallel relation to the longitudinal axis of said chamber, and a hot air intake and a cold air intake communicating with the chamber at spaced points.

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

LYMAN J. BALL.

Witnesses:
DONALD H. OAKES,
VIOLA D. OAKES.