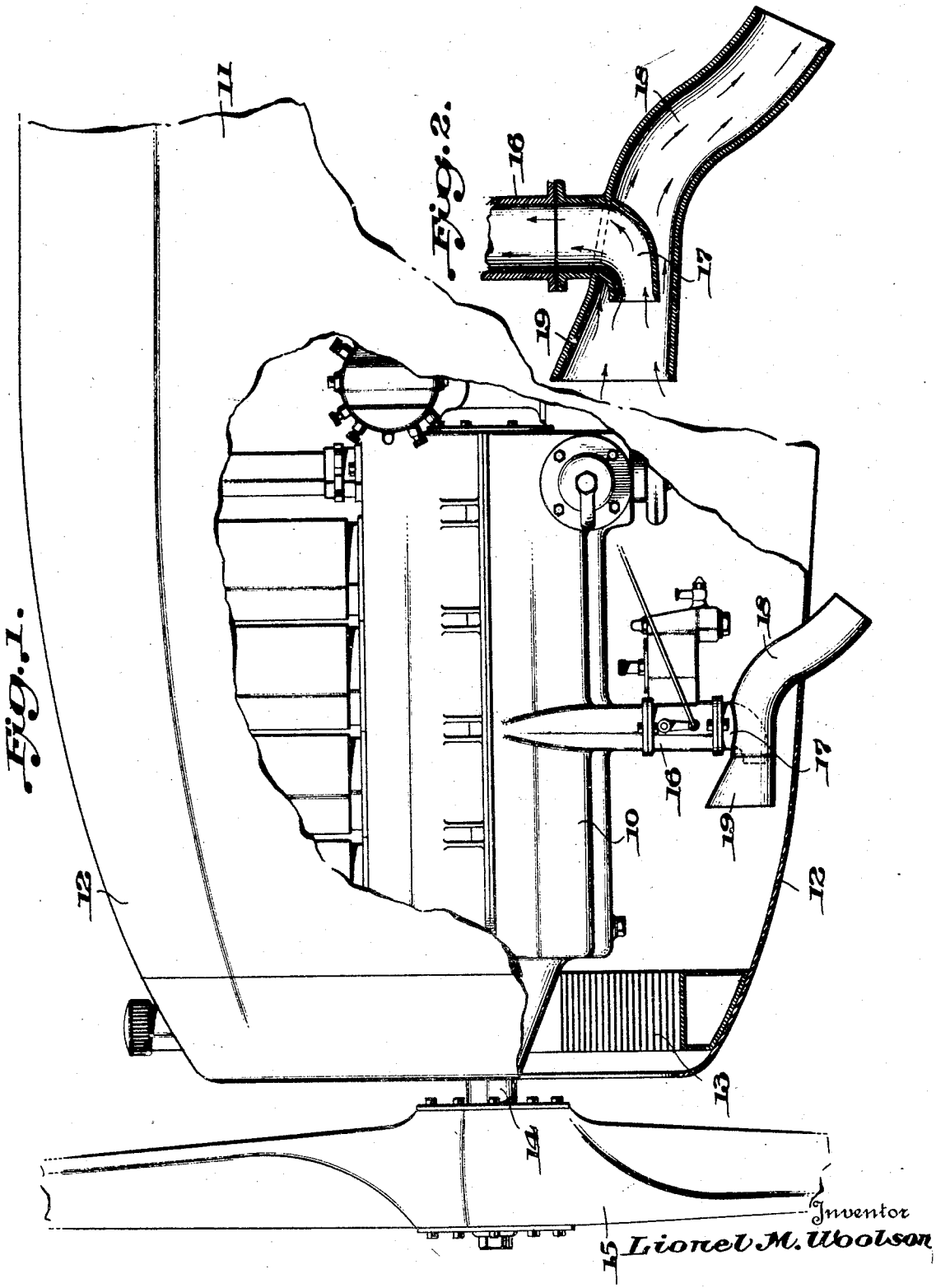
June 24, 1930. L. M. WOOLSON 1,767,422

HYDROCARBON MOTOR

Filed March 22, 1921



Inventor
Lionel M. Woolson

By Milton Tibbetts.
Attorney

Patented June 24, 1930 1,767,422

UNITED STATES PATENT OFFICE

LIONEL M. WOOLSON, OF DETROIT, MICHIGAN, ASSIGNOR TO PACKARD MOTOR CAR COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN

HYDROCARBON MOTOR

Application filed March 22, 1921. Serial No. 454,555.

This invention relates to hydrocarbon motors, and particularly to the construction and arrangement of the air intake for the carburetor of the motor.

From a fire-hazard standpoint it has been found, both in airplane and motor vehicle construction, to be objectionable to arrange the carburetor of the motor so that drippings therefrom could remain inside the motor casing where they would create explosive gases liable to be fired by a motor back-fire. In some cases a drain has been provided from the carburetor to a point outside the motor casing and in other cases, particularly in airplane use, the main air intake of the motor carburetor has been extended to the outside of the casing so that all drippings from the carburetor would flow thru the main air intake outside of the casing and all back-fires thru the carburetor would expend themselves harmlessly outside the casing.

It has been found however that the arrangement of the air intake outside the casing in airplane use, is objectionable in cold weather or at high altitudes where the temperature is always low, because by this construction the carburetor was necessarily supplied with cold air that is not conducive to good vaporization.

For the purpose of overcoming this cold air objection to previous constructions while at the same time maintaining the outside drip feature and the direction of the back-fire outside of the casing, the present invention has been devised. In addition, the invention provides for an acceleration of the movement of the air into the carburetor intake, by reason of the injector action it affords.

Generally speaking the invention consists of the provision of a conduit around the main air intake of the motor carburetor, which conduit is open at both ends and somewhat contracted immediately around the air intake. The front or inlet end of the conduit, besides being expanded or bell shaped, opens forwardly inside of the motor casing so that it receives the warm air that has just passed thru the radiator at the front end of the motor. The other or outlet end of the conduit is outside of the casing and is open downwardly and rearwardly so that it is exposed to suction of the passing air.

The invention will now be described more in detail by reference to the drawings, which form a part of this specification, and in which:

Fig. 1 is a side elevation of the front end of an airplane with part of the motor casing cut away to show the position and arrangement of the carburetor and other associated parts of the motor; and

Fig. 2 is an enlarged detail sectional view of the carburetor intake and the conduit associated with it.

Referring to the drawings 10 represents a motor mounted in an airplane 11 the front part 12 of which forms a casing about the motor 10. At the front end of the casing is a radiator 13 of usual construction and by means of which the cooling water of the motor is lowered in temperature. The crankshaft 14 of the motor 10 extends thru the radiator 13 and a propeller 15 is secured to it so that it rotates immediately in front of the radiator. This action, besides moving the airplane, greatly increases the velocity of the air thru the radiator 13 and of course the air as it passes thru the radiator is somewhat raised in temperature. The air passes out of the casing 12 at the rear end thereof.

The motor carburetor is indicated at 16 and its main air intake or passage is indicated at 17. The construction of this passage is shown in detail in Fig. 2 and it will be seen that it forms an elbow and opens towards the front of the motor so that the warm air will be readily received by it.

Formed as an integral part of the elbow which forms the intake 17, or otherwise, is a conduit 18. This conduit extends around the intake 17 and from the intake the lower wall of the conduit extends downwardly toward the rear so that any drippings of gasoline or other fuel from the intake 17 will drain thru the conduit 18 to its rear end. This rear end extends thru the lower wall of the casing 12 so that it is entirely outside the casing and no drippings therefore can remain in the casing.

The front end 19 of the conduit 18 is some-

what expanded or bell shape from the intake 17 forwardly so that it may be said to be somewhat contracted at the intake thereby increasing the velocity of the air passing thru the conduit at that point. This construction secures an injector action which aids materially in supplying air to the carburetor thru the intake 17.

It will be observed that not only are the drippings from the carburetor caused to pass out thru the rear end of the conduit 18 but the rapid flow of air thru the conduit will meet any back-fire that may take place in the carburetor and reverse its direction and cause it to be expelled thru the rear end of the conduit 18 and therefore outside of the casing 12. But even should an excessively forceful back-fire take place which could not be turned by the flow of air thru the conduit, yet it would expend itself harmlessly inside the casing 12 because there can be no collection of drippings in the casing.

Other forms and modifications of the invention may be made without departing from the spirit or scope of it.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. The combination with a hydrocarbon motor, of a casing surrounding the motor, an air intake injector suspended by the motor carburetor within the casing and having its discharge passage outside the casing.

2. In an airplane, the combination with a motor and a casing around the motor, of a carburetor for the motor having an air intake injector suspended therefrom receiving air from inside the casing while discharging outside the casing in event of back-fire.

3. In an airplane, the combination with a motor and a casing around the motor, open at its front end to receive air, of a carburetor for the motor having an air intake suspended therefrom and directed towards the front end of the casing to receive air from the casing, and a conduit connected to said intake and leading outside the casing to discharge to the atmosphere in event of back-fire.

4. In an airplane, the combination with an engine and carburetor therefor having an air intake, of a casing about the engine, and a conduit around the air intake to carry air thereto from inside the casing and connect the intake with the atmosphere outside the casing in event of back-fire.

5. In an airplane, the combination with the motor having a carburetor, and a casing about the motor and carburetor, of a conduit open at both ends and having one end inside the casing facing towards the open end of the casing and the other end outside the casing, the air intake of said carburetor being connected to said conduit.

6. In an airplane, the combination with a carburetor having an air intake facing forward, and a casing enclosing the carburetor and open at its forward end, of a conduit surrounding said air intake and having its intake end facing forwardly inside the casing and its outlet end extending through the casing and opening rearwardly.

7. In an airplane, the combination with a carburetor having an air intake facing forward, and a casing enclosing the carburetor and open at its forward end, of a conduit surrounding said air intake and having its intake end facing forwardly inside the casing and its outlet end extending downwardly and through the casing to the outside thereof.

8. In an airplane, the combination with a carburetor having an air intake facing forward, and a casing enclosing the carburetor and open at its forward end, of a conduit surrounding said air intake and having its intake end facing forwardly inside the casing and its outlet end extending downwardly through the casing and opening rearwardly.

9. The combination with the air intake of a carburetor, of a conduit surrounding said intake and open at both ends, and a casing about the carburetor, one end of said conduit being inside the casing and the other end outside.

10. The combination with the air intake of a carburetor, of a conduit surrounding and in open communication with said intake, said conduit being open to the atmosphere at both ends and arranged with the outlet end serving as a carburetor drain, and means for supplying warm air to the inlet end of said conduit.

11. The combination with the air intake of a carburetor, of a conduit surrounding and in open communication with said intake and open to the atmosphere at both ends, the outlet end of said conduit serving as a carburetor drain, a casing about the carburetor, means for heating the air passing into said casing, and means for blowing said air into one end of said conduit.

In testimony whereof I affix my signature.

LIONEL M. WOOLSON.