United States Patent

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[72] Inventor **Georg Faltermeier**
Wolnzach, Germany

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[73] Assignee **Audi NSU Auto Union Aktiengesellschaft**
Danube, Germany

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[33] **Germany**
[31] **P 18 14 129.2**

[54] **SUCTION PIPE FOR AN INTERNAL COMBUSTION ENGINE WITH A SPRAY CARBURETOR**
5 Claims, 2 Drawing Figs.

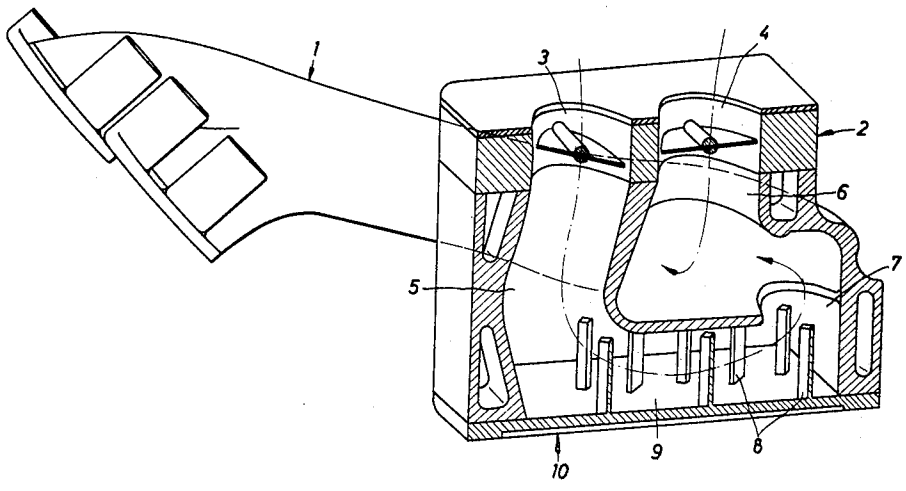
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Primary Examiner—Morris O. Wolk
Assistant Examiner—R. E. Serwin
Attorney—Richards & Geier

ABSTRACT: A suction pipe for an internal combustion engine with a spray carburetor having two parallel mixing chambers each of which has a conduit for the mixture. The suction pipe is particularly characterized by a channel joining the mixing chamber of the first stage and extending below a widened conduit connected to the second stage. The channel is provided with inserts which produce eddies and its projection upon an imaginary horizontal plane is perpendicular to the projection of the widened portions of the conduit.



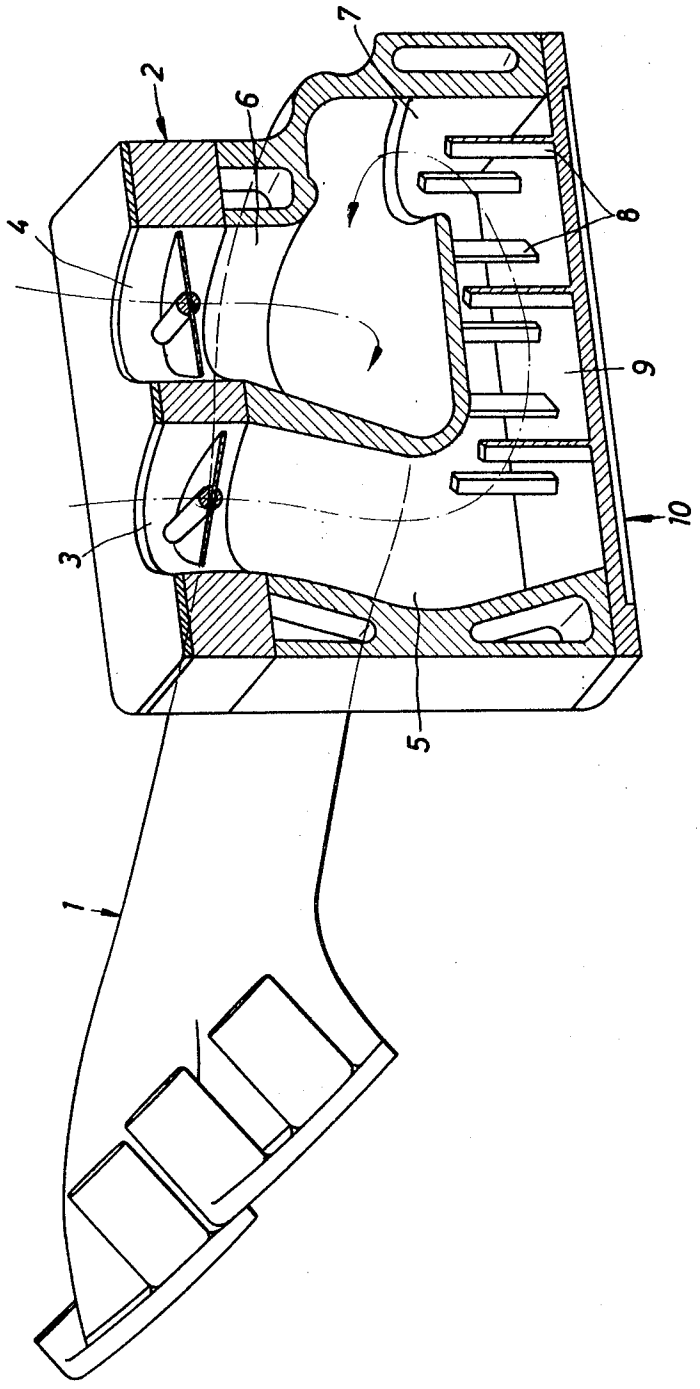
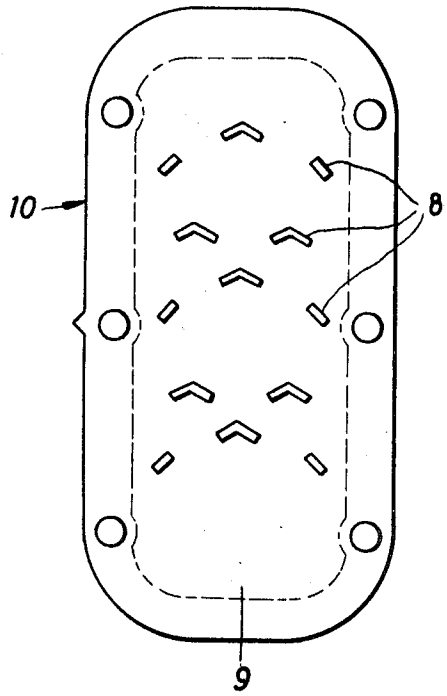


Fig.1

Inventor:
G. Faltermeier
By Richards & Geier
ATTORNEYS

Fig. 2



Inventor:
G. Faltermeier
By Richards & Geier
ATTORNEYS

SUCTION PIPE FOR AN INTERNAL COMBUSTION ENGINE WITH A SPRAY CARBURETOR

This invention relates to a suction pipe for an internal combustion engine with a spray carburetor having two parallel mixing chambers with separate conduits for the mixture.

A machine provided with such a carburetor can have a substantially uniformly composed mixture of fuel and air over its entire range of revolutions, since the speeds of flow of air through the two mixing chambers are greater than when only one mixing chamber is used. Nevertheless, when the machine is operated with the first mixing chamber, fuel is deposited in the suction pipe. To provide a good output for the machine the carburetor must be set at that stage to a fatter mixture. This results in a high fuel consumption, and also in an exhaust gas having a high amount of poisonous components.

An object of the present invention is to eliminate or diminish by simple means these drawbacks of prior constructions.

Other objects of the present invention will become apparent in the course of the following specification.

In the accomplishment of the objectives of the present invention it was found desirable to provide a channel joining the mixing chamber of the first stage and extending under a widened conduit which joins the second stage. The channel is provided with inserts which produce stage. The channel is provided with inserts which produce eddies. The projection of the channel upon an imaginary horizontal plane is perpendicular to the projection of the widened part of the conduit.

During operation with the first stage of the carburetor, the comparatively thin mixture is so diluted prior to its entry into suction pipe branches at the eddy-producing inserts that a practically homogenous mixture is present at the end of the channel having the inserts. The following suction pipe branches have, therefore, substantially no influence upon the composition of the mixture which is supplied to the individual cylinders. An intensive heating of the suction pipe is not necessary any more since the eddies have a more important and greater effect on evaporation.

To simplify construction, the inserts producing the eddies can be cast in a wall constituting a lower end for the channel and this wall can be preferably made a part of a removable cover.

As inserts producing the eddies are preferably used V-shaped rods with the vortex of the V being located in the direction of flow of the mixture.

The invention will appear more clearly from the following detailed description when taken in connection with the accompanying drawings, showing, by way of example only, a preferred embodiment of the inventive idea.

In the drawings:

FIG. 1 is a perspective section through a device of the present invention;

FIG. 2 is a top view of one of the parts.

FIG. 1 shows a spray carburetor 2 connected with a suction pipe 1. The mixing chambers 3 and 4 of the carburetor extend parallel to each other. A channel 5 is connected to the mixing chamber 3 of the first stage while a conduit 6 is connected to the mixing chamber 4 of the second stage. The conduit 6 is widened and extends into the individual section pipe branches, for example, four branches. At 7 the channel 5 opens into the widened part of the conduit 6. Inserts 8 which produce eddies, extend into the channel 5. A imaginary projection of the channel 5 upon its lower wall 9 extends vertically to the imaginary projection of the widened portion of the conduit 6. The wall 9 is a component part of the removable cover 10. The inserts 8 are cast upon the cover 10, they are constructed as V-shaped profiled rods with the vortex of the V extending in the direction of flow of the mixture.

When the internal combustion engine is running, it receives a mixture of air and fuel through the mixing chamber 3 and the corresponding open throttle valve. The throttle valve of the mixing chamber 4 of the second stage is then closed. The thinned mixture flows out of the mixing chamber 3 into the channel 5 and receives a turbulent motion from the inserts 8. Little drops which are carried along are diminished while flowing around the inserts 8 and are evaporated when the thinned mixture enters the widened portion of the conduit 6 through the passage 7.

Consequently, a nearly homogenous mixture will flow in the widened portion of the conduit 6. When further gas is supplied, the throttle valve in the mixing chamber 4 will also open in the usual manner and will supply a mixture for the middle and upper power ranges.

I claim:

1. In an internal combustion engine, in combination with a suction pipe, a spray carburetor comprising two parallel mixing chambers for the first and second stages, respectively, a channel connected to the mixing chamber of the first stage, a conduit having a widened portion and connecting the mixing chamber of the second stage with the suction pipe, said channel extending under said widened conduit portion and communicating therewith, and eddies-producing inserts in said channel, the projection of said channel upon an imaginary horizontal plane extending perpendicularly to the projection of the widened portion of said conduit.

2. A device in accordance with claim 1, wherein said channel has a bottom wall carrying said inserts.

3. A device in accordance with claim 2, wherein said inserts are cast upon said bottom wall.

4. A device in accordance with claim 2, comprising a removable cover, said bottom wall being a part of said cover.

5. A device in accordance with claim 1, wherein said inserts consist of V-shaped profiled rods, the vortex of the V extending in the direction of flow of the combustion mixture.