

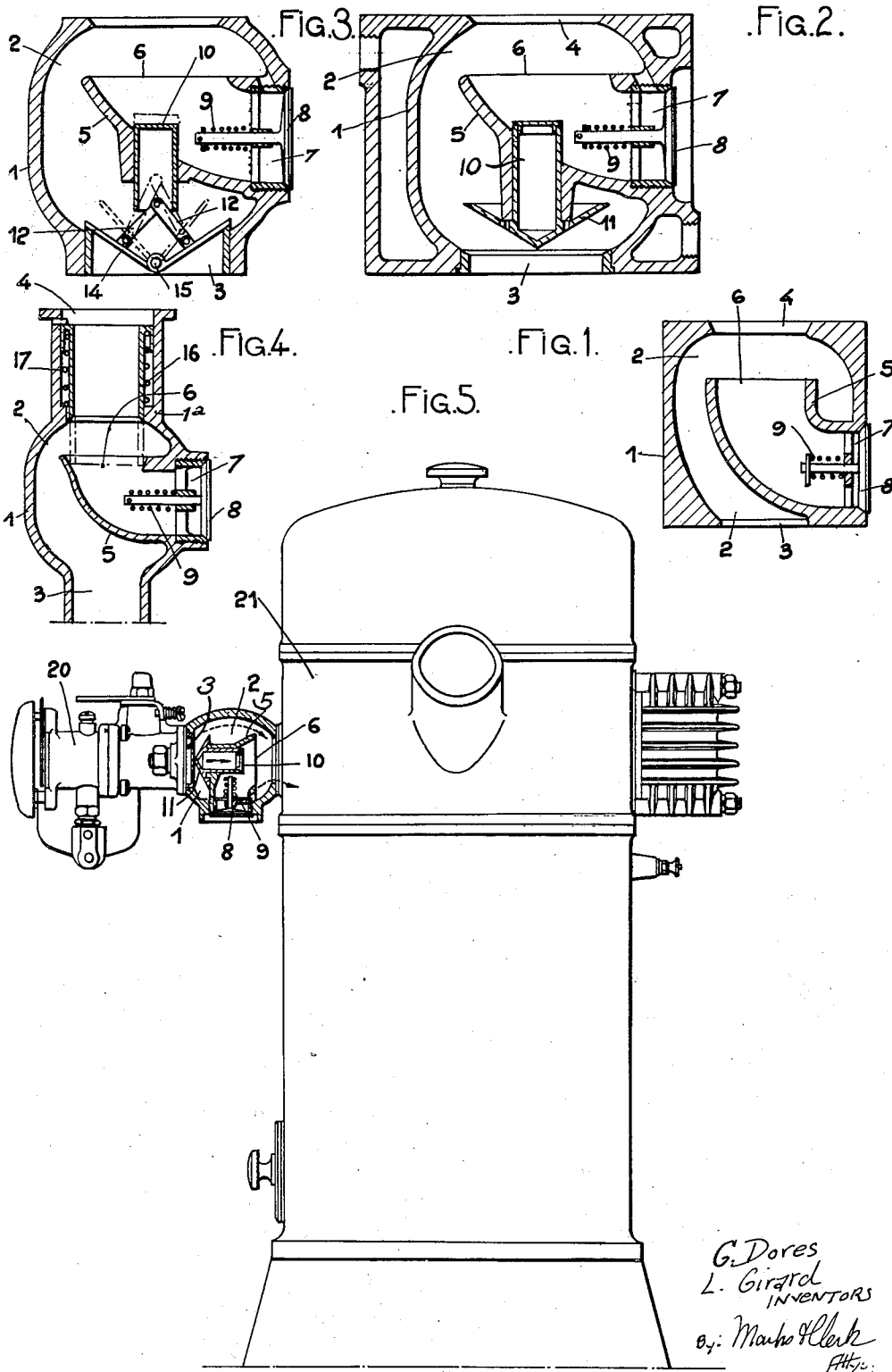
April 9, 1935.

G. DORES ET AL

1,996,861

DEVICE FOR PREVENTING BACKFIRING, CAPABLE OF BEING USED
AS THEFT PREVENTING DEVICES FOR ANY APPLICATIONS

Filed Oct. 24, 1930



G. Dores
L. Girard
INVENTORS
By: *Marbo & Clark*
ATTY.

UNITED STATES PATENT OFFICE

1,996,861

DEVICE FOR PREVENTING BACK-FIRING,
CAPABLE OF BEING USED AS THEFT-PRE-
VENTING DEVICES FOR ANY APPLICA-
TIONSGaston Dores, Paris, and Lucien Girard,
Montrouge, FranceApplication October 24, 1930, Serial No. 490,994
In France October 28, 1929

6 Claims. (Cl. 123—142)

This invention relates to improvements in safety apparatus for avoiding the return of ignited gases to the carburettor feeding an engine.

The improved safety apparatus according to the invention is arranged between the inlet pipe for the carburetted mixture of the engine and the carburettor.

This apparatus comprises in combination: a casing forming a chamber and having an inlet communicating with the carburettor and an outlet communicating with the engine, a tubular member having an end which opens in an opposite direction to the inlet and projects into the chamber in the casing to a point near the outlet, the other end of the tubular member opening to the atmosphere, the outer surface of the tubular member being spaced from the internal wall of the said chamber to provide an annular passage for the sucked mixture.

The invention has for further object various forms of construction which will appear from the following description with reference to the accompanying drawings, given by way of example only, in which:

Figs. 1, 2, 3 and 4 respectively illustrate, in elevation and axial longitudinal section, four forms of construction of an apparatus according to the invention.

Fig. 5 is an explanatory figure showing the position of the apparatus, illustrated in Fig. 2, between a carburettor and an engine fed by this carburettor.

In the first form of construction illustrated in Fig. 1, the apparatus comprises a casing 1 forming a chamber 2 and having an inlet 3 for the combustible mixture entering the carburettor, and an outlet 4 for directing the combustible mixture towards the engine. Deflecting means in the form of a tubular member 5, having an open end 6 arranged opposite the outlet 4 and directed in reverse direction to the inlet 2, opens to the atmosphere through its other end 7 controlled by a valve 8, urged to closed position by a spring 9. The tubular member 5 is so arranged that its outer walls and the inner walls of the chamber 2, limit a substantially annular space in which circulate, during the normal feeding period of the engine, the combustible gases coming from the carburettor, these gases, which enter the inlet 3, pass in the chamber 2 and flow, through the port 4, towards the engine. During this normal feeding period, the valve 8 closes the end 7 of the tubular member 5, in order to avoid any admission of air.

In case ignited gases coming from the engine should return towards the carburettor, these ig-

nited gases enter the port 4 and the open end 6 of the tubular member 5, they flow through this tubular member 5 towards the valve 8, which they lift in order to be evacuated outside the apparatus.

In the other Figures 2, 3 and 4 of the drawings, the same or similar parts are designated by the same reference numbers, and the general operation previously indicated is the same. In the forms of construction illustrated in Figs. 2, 3 and 4, the safety apparatus is completed by obturating members allowing, upon return of the ignited gases, to cut off the communication between the engine and the carburettor.

In the example shown in Fig. 2, a small piston 10, movable in translation in the tubular member 5, is rigid with the valve 11 of which it forms the rod.

During normal feeding of the engine, the valve 11 occupies the position shown in Fig. 2. In case of return of the ignited gases, the latter act on the small piston 10 and even on the valve 11 which then closes the port 3, the ignited gases flowing, through the tubular member 5, to the atmosphere, by lifting the valve 8.

In the example shown in Fig. 3, the small piston 10 is connected, by links 12, to two flapping members 14 pivoted about a shaft 15. In case of return of ignited gases, the piston 10, on which these gases act, actuates, through the medium of the links 12, the flapping members 14 which obturate the port 3.

In the example shown in Fig. 4, the casing 1 comprises an extension constituted by a guide member for a tubular obturator 16 constantly urged upwardly by a weak spring 17. In case of return of ignited gases, the tubular obturator 16 is moved downwardly and exactly fits against the open end 6 of the tubular member 5, thus cutting off the communication between the inlet 3 and the outlet 4 and constituting, with the tubular member 5, a single channel directing the ignited gases towards the exterior, these gases lifting the valve 8.

Fig. 5 shows, by way of indication, the position of the apparatus, illustrated in Fig. 2, between a carburettor 20 and an engine 21.

What we claim as our invention and desire to secure by Letters Patent is:

1. In an apparatus for security against back-firing for preventing the ignited gases on the return path from reaching a carburettor for feeding an engine, the arrangement of an apparatus between the inlet pipe for the carburetted mixture of the engine and said carburettor, said appara-

tus comprising in combination a casing forming a chamber and having an inlet communicating with the carburettor and an outlet communicating with the engine, a tubular member having an end which opens in an opposite direction to the inlet and projects into the chamber in the casing to a point near the outlet, the other end of the tubular member opening to the atmosphere, the outer surface of the tubular member being spaced from the internal wall of the said chamber to provide an annular passage for the sucked mixture, obturating means associated with the outlet end of the tubular member for preventing the admission of air into the said tubular member, but allowing the evacuation from said tubular member to the exterior, so that during the normal running period, the sucked mixture passes through the annular space from the carburettor towards the engine and, in the case of the return of ignited gases from the engine towards the carburettor, the inlet of said tubular member entrains and directs said gases to the obturating means and thence to the atmosphere.

2. In an apparatus for security against back-firing for preventing the ignited gases on the return path from reaching a carburettor for feeding an engine, the arrangement of an apparatus between the inlet pipe for the carburetted mixture of the engine and said carburettor, said apparatus comprising in combination a casing forming a chamber and having an inlet communicating with the carburettor and an outlet communicating with the engine, a tubular member having an end which opens in an opposite direction to the inlet and projects into the chamber in the casing to a point near the outlet, the other end of the tubular member opening to the atmosphere, the outer surface of the tubular member being spaced from the internal wall of the said chamber to provide an annular passage for the sucked mixture, a valve for controlling the end of the tubular member opening in the atmosphere, for preventing the admission of air into the said tubular member but allowing the evacuation from said tubular member to the exterior, means for automatically restoring said valve to its closing position, a second valve allowing only the passage of the mixture from the carburettor to the engine, a small piston being movable in translation in the tubular member, means for connecting said small piston to said second valve in such a manner that the piston forms the stem of the valve so that the return of the ignited gases acting on the small piston facilitates the displacement of the second valve for cutting off the communication between said casing and said carburettor and so that, during the normal running period, the sucked mixture passes through the annular space from the carburettor towards the engine and, in the case of the return of ignited gases from the engine towards the carburettor, the inlet of said tubular member entrains and directs said gases to the first valve and thence to the atmosphere.

3. In an apparatus for security against back-firing for preventing the ignited gases on the return path from reaching a carburettor for feeding an engine, the arrangement of an apparatus between the inlet pipe for the carburetted mixture of the engine and said carburettor, said apparatus comprising in combination a casing forming a chamber and having an inlet communicating with the carburettor and an outlet communicating with the engine, a tubular member having an end which opens in an opposite

direction to the inlet and projects into the chamber in the casing to a point near the outlet, the other end of the tubular member opening to the atmosphere, the outer surface of the tubular member being spaced from the internal wall of the said chamber to provide an annular passage for the sucked mixture, a valve for controlling the end of the tubular member opening in the atmosphere, for preventing the admission of air into the said tubular member but allowing the evacuation from said tubular member to the exterior, means for automatically restoring said valve to its closing position, two flapping members pivoted about one and the same fixed shaft and allowing only the passage of the mixture from the carburettor to the engine, a small piston movable in translation in the tubular member, links for connecting the small piston to said flapping members so that the return of the ignited gases acting on the small piston facilitates the displacement of the flapping members for cutting off the communication between said casing and said carburettor, and so that, during the normal running period, the sucked mixture passes through the annular space from the carburettor towards the engine and, in the case of the return of ignited gases from the engine towards the carburettor, the inlet of said tubular member entrains and directs said gases to the valve and thence to the atmosphere.

4. In an apparatus for security against back-firing for preventing the ignited gases on the return path from reaching a carburettor for feeding an engine, the arrangement of an apparatus between the inlet pipe for the carburetted mixture of the engine and said carburettor, said apparatus comprising in combination a casing forming a chamber and having an inlet communicating with the carburettor and an outlet communicating with the engine, a tubular member having an end which opens in an opposite direction to the inlet and projects into the chamber in the casing to a point near the outlet, the other end of the tubular member opening to the atmosphere, the outer surface of the tubular member being spaced from the internal wall of the said chamber to provide an annular passage for the sucked mixture, a valve for controlling the end of the tubular member opening in the atmosphere, for preventing the admission of air into the said tubular member but allowing the evacuation from said tubular member to the exterior, means for automatically restoring said valve to its closing position, a tubular obturator movable in translation in the outlet of the casing and which connects, during a return of the ignited gases towards the carburettor, with the end of the tubular member for forming a continuous channel with this tubular member and for directing the ignited gases to the valve and thence to the atmosphere.

5. Apparatus of the character described including in combination with the suction pipe of an internal combustion engine, a casing having an inlet and outlet interposed in the suction pipe and also provided with a relief port communicating with the atmosphere, valve means for the port acting to normally prevent admission of outside air and deflecting means means within the casing and extending from the port to a point near and opposite the outlet and acting to allow the normal passage of liquid fuel from the inlet to the outlet but entraining a back firing charge from the outlet and directing it to the re-

lief port so that it will be exhausted by the valve means.

6. Apparatus of the character described including in combination with the suction pipe of an internal combustion engine, a casing having an inlet and outlet interposed in the suction pipe and also provided with a relief port communicating with the atmosphere, valve means for the port acting to normally prevent admission of outside air and deflecting means within the casing and extending from the port to a point near and

opposite the outlet and acting to allow the normal passage of liquid fuel from the inlet to the outlet but entraining a back firing charge from the outlet and directing it to the relief port, and additional valve means mounted in the casing for allowing the normal passage of liquid fuel thereto but closing under the action of a back firing charge to prevent the passage of the latter rearwardly through the inlet.

GASTON DORES.
LUCIEN GIRARD.