April 3, 1934. R. SPAGLIARDI 1,953,443

NONRETURN VALVE ADAPTED TO AVOID BACKFIRING IN INTERNAL COMBUSTION ENGINES

Filed Oct. 8, 1932

Fig. 1

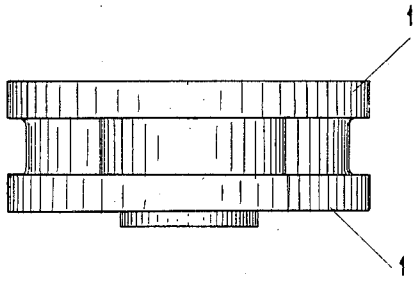


Fig. 3

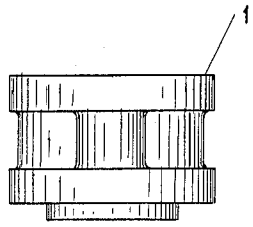


Fig. 2

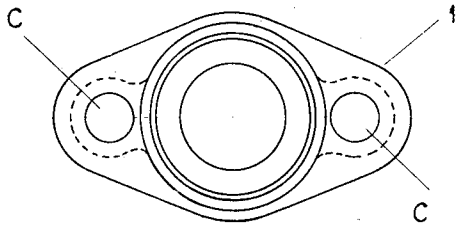


Fig. 5

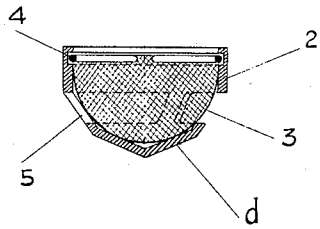
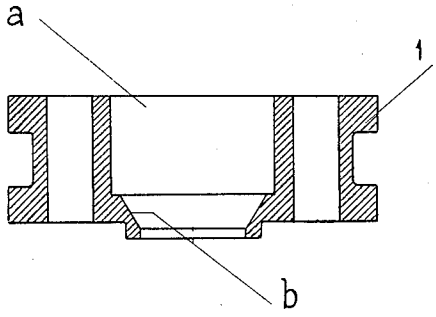


Fig. 4



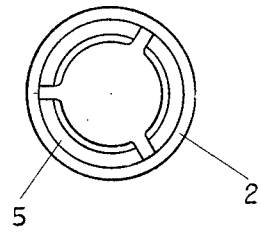


Fig. 6

R. Spagliardi
INVENTOR

By. Marks & Clerk
Attys

Patented Apr. 3, 1934 1,953,443

UNITED STATES PATENT OFFICE

1,953,443

NONRETURN VALVE ADAPTED TO AVOID BACK-FIRING IN INTERNAL COMBUSTION ENGINES

Riccardo Spagliardi, Genova-Cornigliano, Italy

Application October 8, 1932, Serial No. 636,917
In Italy April 18, 1932

2 Claims. (Cl. 123—142)

This invention has for its object a non-return valve adapted to avoid back firing of internal combustion engines, while in normal operation it acts as a regulator and homogenizer of the fuel mixture.

According to the invention back firing is avoided by the fact that the improved non-return valve inserted in the conduit between the cylinders and the carburettor firstly opposes to the propagation of the flames towards the rear a wire netting constituting a screen and then, by the back pressure generated by the back firing intercepts completely the communication between carburettor and cylinders.

An embodiment of the invention is shown in the annexed drawing, in which:

Figure 1 is a front view, Figure 2 a plan and Figure 3 a side view of an embodiment of valve casing;

Figure 4 is an axial section of the casing in the plane of Figure 1; and

Figure 5 shows an axial section of the valve fitted with wire netting, while Figure 6 is a plan view of the same valve without netting.

According to the invention the valve casing 1 is so formed that it can be inserted without further adaptation, between the usual connecting flanges of the carburettor and of the suction pipe. Consequently this casing is provided with a pair of holes *c* that remain in correspondence to those of the usual connecting flanges of the carburettor. The valve casing has a cylindrical bore in which the corresponding cylindrical part of the valve 2 is allowed to slide and ends by one side by a conical seat *b* for the valve.

The valve 2 is constituted, preferably as shown in Figures 5 and 6, of a slotted cup-shaped body lined with wire netting. The cup-shaped body comprises: (1) a cylindrical portion adapted to slide with little friction in the cylindrical bore of the valve casing; (2) a frusto-conical part, provided with large slots 5, which is adapted to bear on the seat *b* of the valve casing, providing for a tight closure; and (3) a full bottom part *d*, with the convex part preferably conical as shown, or eventually rounded.

The wire netting 3 is fastened to the valve 2 preferably by means of an elastic broken ring 4 that is snapped on the said wire netting in correspondence of an annular groove of the valve.

In operation, by the suction of the engine the valve opens more or less, according to the force of the suction.

The explosive mixture, in order to flow through the slots 5 and wire netting 3 must be subjected to deviation and to fractioning and the little drops of fuel not completely evaporated, that remain in suspension within the fuel mixture, are retained by the wire netting 3 acting as a strainer and are allowed to evaporate completely by further flow of mixture. In this manner an homogenization of the mixture and consequently a better utilization of the fuel is obtained.

In the event of a back firing, by the back-pressure generated, the valve 2 is pushed against its conical seat *b*. But, as the velocity of propagation of the flames is largely greater than the speed of closure of the valve, the wire netting 3 serves for avoiding that the flames, before the closure of the valve, may reach the carburettor. The wire netting serves further for providing an additional impact surface for the flowing gases and consequently cooperates to accelerate the closure of the valve.

I claim:

1. A non-return valve to be inserted between the flange of the carburettor and of the suction conduit of an internal combustion engine, the said valve comprising a valve casing having flanges of like dimensions and formed in like manner as those of the carburettor, a bore within this valve casing, a seat for the valve within the bore, a slotted valve intercepting the communication with the bore, and wire netting carried by this valve fitted like a strainer on the valve slots.

2. A non-return valve according to claim 1, in which the valve proper is constituted of a hollow concave body sliding with very little friction within a bore of the valve casing, having a seat for the valve, a circular groove formed near the upper border of the valve proper, from the concave side, a wire netting inserted within the hollow of the concave valve, and a broken wire ring resiliently pressing against the border portions of the wire netting and into the circular grooves of the valve.

RICCARDO SPAGLIARDI.