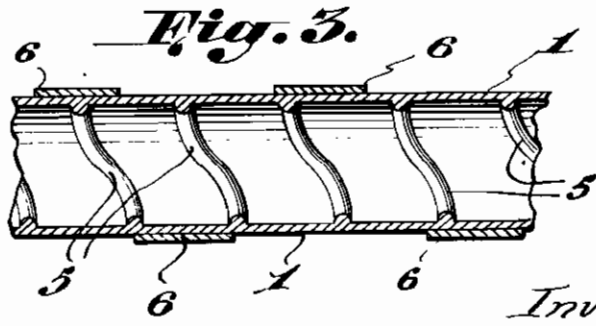
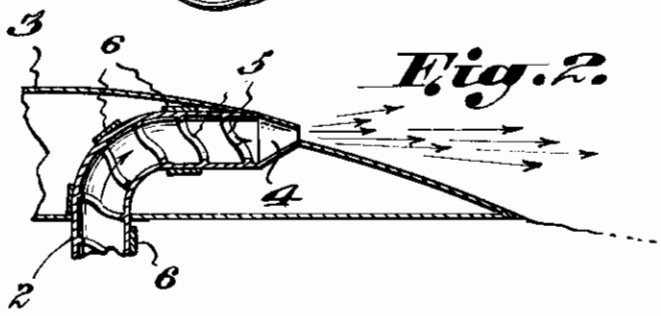
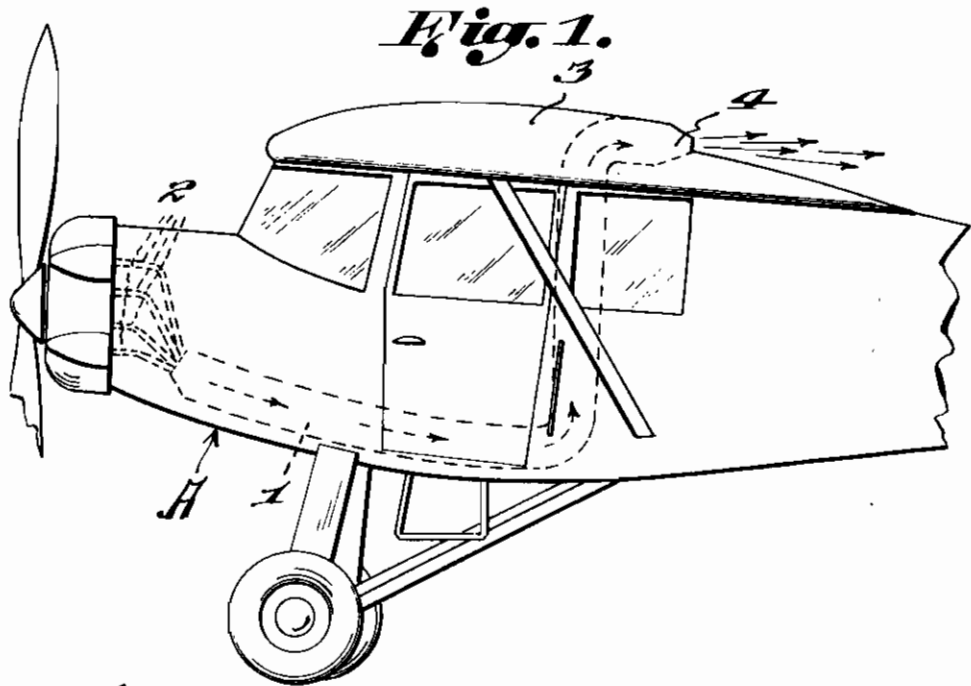


PUBLISHED
MAY 25, 1943.
BY A. P. C.

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EXHAUST GAS PIPE FOR AIRPLANES
Filed June 15, 1940

Serial No.
340,799



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EXHAUST GAS PIPE FOR AIRPLANES

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Application filed June 15, 1940

It is known to discharge the exhaust gases of engines and airplanes through nozzles whereby a thrust is exerted on the airplane so that the speed of flight will be increased. However, the entire noise of the exhaust is emitted undamped from these nozzle-shaped exhaust pipes. Furthermore, it is known to collect the exhaust elements of aero-engines in pipes, the outlet cross-section of which is greater than the total of all exhaust gas inlet cross-sections, and which have for their object to effect a suction of the exhaust gases from the cylinders and thereby to improve the output or efficiency of the engine. Guides may also be arranged in the interior of the collector for the same purpose. It is however not possible to obtain with these pipes an increase of the speed of flight by recoil.

The present invention relates to an exhaust gas pipe for airplanes, the exhaust end of which acts as recoil nozzle and is moreover designed as an output increasing collector known per se. The mouth of the recoil nozzle is arranged above the carrying plane, body or other structural parts of the airplane and the pipe is built in the airplane or cell body, wing or body so that only the outlet mouth is exposed. The exhaust gases pass from the cylinders in the usual manner through individual pipes to a common collecting pipe which is designed in a known manner so that the largest cross-section of this pipe is greater than the total of all inlet cross-sections. Separate helical guides may also be arranged in the interior of the collecting part in order to effect a suction of the exhaust gases. By this arrangement, a suction of the exhaust gases from the cylinders is effected and an improvement of the output or efficiency of the engine is thereby obtained. Heat-withdrawing structural elements for heating or the like may also be arranged in the pipe in a known manner.

At the outlet end, the exhaust gas pipe merges into a recoil nozzle of the known type which effects an increase of the speed of flight by the recoil of the exhaust gases.

The whole pipe is designed in such a manner that the mouth of the exhaust gas pipe is arranged above the carrying plane, body or above other structural parts of the airplane. Moreover, the pipe is built in the airplane or cell body, wing or body within the lining or casing so that only the outlet mouth is exposed.

The recoil nozzle, which is arranged at the end of the outlet pipe, causes an increase of the back pressure in the whole pipe, whose effect on the valves, pistons, engine output etc. in connection with the above-described arrangement is decreased or entirely suppressed by the collecting part which effects a suction of the exhaust gases. The largest cross-section of said collecting part exceeds the total of the inlet cross-sections and separate guides, which effect a suction of the exhaust gases, are built in the said collecting part. The increase of the impact or stem pressure is also simultaneously equalized which may be produced by heat withdrawing elements built in the exhaust pipe. Moreover the arrangement above the carrying plane, body or other structural parts of the airplane has also a downwardly screening and noise reducing effect. Furthermore the exhaust noise relative to exhaust members consisting only of recoil nozzles is also considerably reduced by the back pressure decreasing collecting part, which is arranged in front of the exhaust nozzle in the present case. The organic mounting of the exhaust pipe in the airplane or cell body, wing or body, whereby only the outlet mouth is exposed, also ensures an external air flow and good flying or aerodynamical qualities or characteristics.

ALFRED HETTICH.