

Dec. 31, 1929.

J. G. LYONS

1,741,578

VACUUM WING STABILIZER FOR AEROPLANES

Filed Sept. 28, 1928

Fig. 1

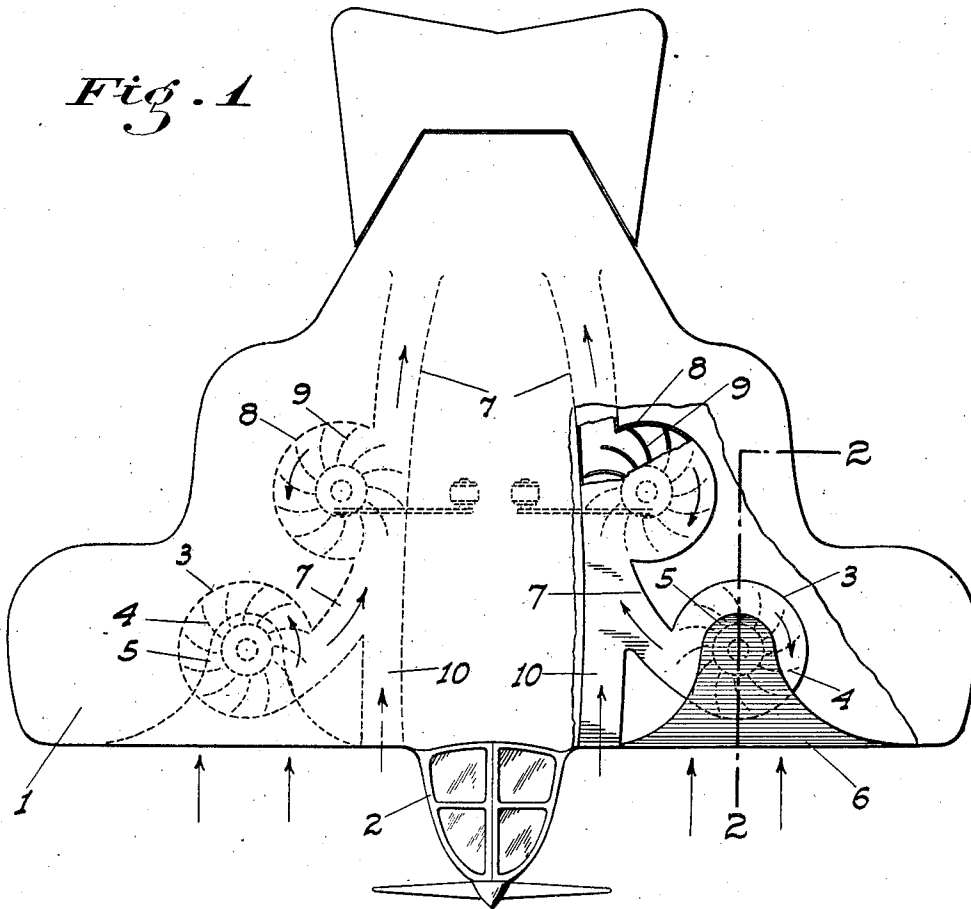
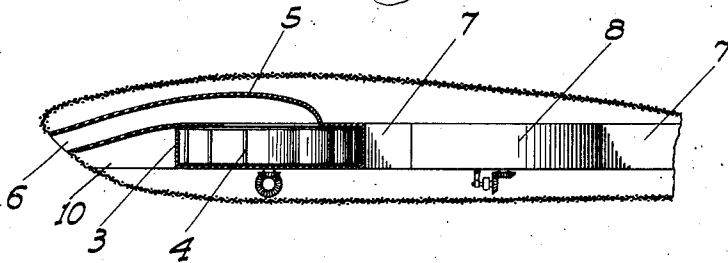


Fig. 2



INVENTOR

J. G. Lyons

BY

Barry J. Webster
ATTORNEY

UNITED STATES PATENT OFFICE

JAMES G. LYONS, OF STOCKTON, CALIFORNIA

VACUUM WING STABILIZER FOR AEROPLANES

Application filed September 28, 1928. Serial No. 309,102.

This invention relates to aeroplanes and particularly to a means for stabilizing the same while in the air. The principal object of my invention is to provide a driven vacuum or suction fan and an air passage arrangement therefor mounted in a wing of any aeroplane in such relation thereto as to tend to stabilize the wing and consequently the plane as a whole by preventing to a great extent the tendency to tilt laterally which machines now have under certain conditions. The structure is entirely concealed inside the wing so that it offers no resistance to the air nor are any parts exposed to the elements.

A further object of the invention is to arrange this fan and passage structure in a combination with the wing turbines such as shown in my co-pending application for patent, Serial No. 259,439, filed March 6, 1928, so that while said structure functions for the above named purpose it will also aid in rotating the turbines, thereby adding to the power output of the latter.

A further object of the invention is to produce a simple and inexpensive device and yet one which will be exceedingly effective for the purpose for which it is designed.

These objects I accomplish by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawings similar characters of reference indicate corresponding parts in the several views:

Fig. 1 is a top plan view of an aeroplane of the type shown in said abovementioned application, equipped with the vacuum fan arrangement cooperating with the turbine power generators, parts being shown broken out.

Fig. 2 is an enlarged fragmentary longitudinal section taken on the line 2—2 of Fig. 1.

Referring now more particularly to the characters of reference on the drawings, the numeral 1 denotes the wing of a monoplane of my improved type, and of the usual hollow construction, and supporting the fuselage or body 2 therebetween centrally of its

span. Mounted inside the wing near the front end equal distances to the sides of the body are the casings 3 of suction fans 4 which are set on vertical axes.

The intake passages 5 to the fans lead forwardly and downwardly from the top of the casings as shown in Fig. 2 and extend to the forward edge of the wing, terminating in wide mouths 6 as shown in Fig. 1. The forward edge of the wing with which the mouths communicate preferably has a downward and rearward slant so that no rain can directly drop into the mouths. Also the downward slope of the intake passages toward the mouths causes any water which might be received therein to drain out instead of passing to the fans. The discharge passages 7 from the sides of the fan casings extend through the wing toward the rear end thereof and discharge downwardly into the atmosphere. If the aeroplane is of the ordinary type, the above features of construction constitute the complete apparatus, it being understood that the fans are adapted to be continually driven while the plane is in flight by any suitable power means, which it is not thought necessary to illustrate.

By reason of this arrangement, continuous and definitely located horizontal strata of moving air symmetrically disposed relative to the body, are drawn into the mouths at the front of the wing and discharged into the atmosphere at the rear. The velocity of these strata being different from the relative velocity of the air as a whole had with the forward movement of the machine, will I believe have a great stabilizing effect on the wing, preventing the same from any tendency to lateral and undesired tilting movement.

If the above structure however, is incorporated in my own improved aeroplane as shown in said co-pending application for patent, the discharge passages 7 communicate intermediate their ends with the horizontal casings 8 of the turbine wheels 9 which project across the passages 7 so as to be acted on by the flow of air passing therethrough.

In this arrangement the passages 7 join onto the main air intake passages 10 of the turbine casings, which passages extend to the front edge of the wing independently of the fan intake passages to receive a flow of air therethrough whose velocity depends entirely on the speed of the plane or on that of the wind. The feeding of a constant flow of air from the suction fans into the turbine passages at a greater velocity than that coming from the passages will add considerably to the power development of the turbines.

From the foregoing description it will be readily seen that I have produced such a device as substantially fulfills the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

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

1. In an aeroplane having a body and a wing, suction fans mounted in the wing, intake passages in the wing leading to the fans from under the front edge of the wing, discharge passages in the wing leading from the fans toward the rear of the wing; said fans and passages being symmetrically disposed onto the sides of the body, air driven turbines mounted in the wing, said turbines projecting into the discharge passages of the fans to be acted on by the flow of air therethrough, and additional air passages leading from the front edge of the wing to communicate with said discharge passages ahead of the turbines.
2. In an aeroplane having a body and a hollow wing, driven suction fans mounted in the wings intermediate their ends on both sides of the body and set on vertical axes, casings surrounding the fans, intake passages in the wing leading from under the front edge of the wing to top of the fan casings, and discharge passages in the wing leading rearwardly from the sides of the casing to the atmosphere.
3. In an aeroplane comprising essentially a body, a wing directly superimposed thereon, and a driving propeller at the front end of the body, open ended air passages extending lengthwise in the wings on both sides of the body and terminating at their front ends under the forward edge of the wing but in a position to receive the horizontal air streams thrown back from the propeller to the sides of the body, and suction fans in the wing arranged to pull air from the front ends of the passages and force the same out of the rear end thereof.
4. In an aeroplane having a body and a wing, open ended air passages extending lengthwise in the wings on both sides of the

body and terminating at their front ends under the forward edge of the wing, suction fans in the wing for creating a flow of air through said passages from front to rear, and a driving propeller for the aeroplane positioned to throw horizontal streams of air in the horizontal plane of the front ends of the passages.

In testimony whereof I affix my signature.
JAMES G. LYONS.