

June 27, 1933.

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1,915,481

SUPPORTING PLANE FOR AIRCRAFT

Filed June 24, 1930

Fig. 1

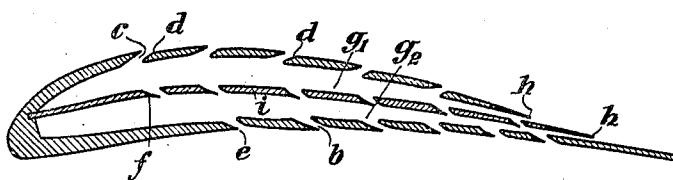
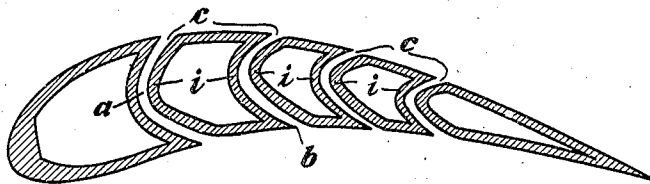


Fig. 2



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SUPPORTING PLANE FOR AIRCRAFT

Application filed June 24, 1930, Serial No. 463,550, and in Austria July 31, 1929.

This invention relates to improvements in supporting planes for air craft and has for its object to increase the efficiency thereof. A further object of the present invention consists in that the supporting plane can be used as wing for flying machine with flapping wings or lifting propeller, or as rudder plane, propeller wing and the like. It is already known to provide supporting planes of this kind with recesses; slits or channels extending from the top side to the bottom side or to construct them like venetian blinds whereby slots, extending from the top side to the bottom side, are left between the individual parts of the wing in order to increase the elevating force. In these known constructions the recesses, channels or slits were disposed in such a manner that, in its normal direction of flow, the air-current passes from the bottom side of the supporting plane through the same and out at the top side thereof.

Also constructions are known in which the whole supporting plane consists of individual rocking members (ribs), which however after rocking act as individual supporting planes or in the case of the ribbed construction serve for mechanically effecting the forward movement.

According to the present invention the efficiency of the supporting planes, thus an increased gliding and carrying capacity, as well as a shorter starting distance and run out, can be controlled by increasing the underpressure and overpressure, this being effected by constructing and fitting the recesses, channels or slits in such a manner that, by aerodynamic action, inlet and suction effects are produced at the mouthpieces which promote the exhausting at the top side and thus increases the underpressure, and further prevents the air to flow off at the bottom side of the supporting plane so that the same is compressed and consequently the overpressure is increased.

At the start this effect is attained by posi-

tively introducing the air at the top side of the supporting plane and sucking off the same at the bottom side if desired until actual flight takes place, in which case the increased underpressure causes a sucking action at the top side at the upper end of the recesses, which counteracts the sucking action at the bottom openings.

This effect is attained by the particular position and shape of the mouthpieces or openings at the top and bottom sides of the supporting planes and the recesses, which latter generally are directed at an incline downwardly and rearwardly from the top side of the supporting plane in the direction of the incoming air current, thereby promoting the admission of air at the top side and the flow of the blowing air effecting a sucking action at the bottom side. In a particular construction the recesses are shaped at the top side of the supporting plane at first at an incline forwardly and subsequently rearward and downward, so that the course of the connecting ways is somewhat C-shaped from the top side to the bottom side.

The recesses may be formed by channels, slits or the hollow space of the supporting plane and thus the openings (inlets and outlets) are of uniform shape or are formed by the venetian blinds like overlapping of the supporting plane cover. In the event of flat profiles a venetian blinds like overlapping of the individual parts is quite sufficient, between which the recesses, channels or slits are formed owing to the overlapping of the individual parts. The flow off of the supporting air in the underpressure space is preferably prevented by arranging for instance elastic flaps in the recesses, channels or slits and flexible ends at the openings, which are automatically shut by moving upward owing to pressure from underneath and sucking action from above.

Some modes of carrying out the present invention are illustrated by way of example on

the accompanying sheet of drawing in which:—

Fig. 1 shows a construction in which the hollow space is divided into compartments by a partition provided with recesses.

Fig. 2 is a diagrammatic view of a supporting plane provided with C-shaped channels or slits.

The supporting planes shown in Fig. 1 are provided with bottom openings *b* and top openings *c* while compared with the top openings *c* the bottom openings are disposed rearwardly in the direction of flow of the air current.

At the top opening the back corner *d* and at the bottom opening the front corner *e* are slightly superelevated and elastic so that the air is forced upwardly through the plane by the dam of the edge *d*, while a sucking action arises at the bottom opening *b*.

The interior of the supporting plane is hollowed out which equalizes the pressure between the openings. The elastic ends of the parts, constructed like venetian blinds and forming the surfaces, are in the shape of automatic shutters.

A multi-recessed partition *i* if desired may be constructed like venetian blinds and arranged in the hollow space of the plane and divide the same into compartments *g*¹ and *g*². The flaps *f* are arranged at the edges of the slits of the partition and, in construction like venetian blinds, are formed by the elastic ends. Discharge slits *h* are formed in the back portion of the supporting planes shown in Fig. 1. The partition may be elastic near the ends of the slits.

As shown in Fig. 2, the air outlet *b* in the pressure zone of the plane as well as the air inlet in the vacuum zone *c* of the plane are inclined rearwardly against the direction of flight, so that the apex of the air guide channel *a* is disposed forwardly of said inlet and outlet and thus the shape of said channel is substantially C-shaped.

Having thus fully described the invention what is claimed as new and desired to be secured by Letters Patent is:—

1. In a supporting member for air crafts of a stream-line shaped outline in cross-section and having inlet slots in its bottom face and outlet slots in its top face through which, without disturbing the air current passing along the faces of the supporting member, flows a part of the air from the bottom side upward to the top side in view of the over-pressure at the bottom side and the vacuum at the top side, a partition in the supporting member dividing the latter into a top part and a bottom part, and said partition having a recess therein.

2. In a supporting member for air crafts of a stream-line shaped outline in cross-section and having inlet slots in its bottom face and outlet slots in its top face through which,

without disturbing the air current passing along the faces of the supporting member, flows a part of the air from the bottom side upward to the top side in view of the over-pressure at the bottom side and the vacuum at the top side, a partition in the supporting member dividing the latter into a top part and a bottom part, and a recess in said partition, said recess being located in the direction of flight in front of said inlet and outlet slots.

In testimony whereof I affix my signature.
JULIUS FRANZ ZIEGLER.

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