R. GOLDSCHMIDT.

VIBRATING WING FOR FLYING MACHINES.

APPLICATION FILED JAN. 29, 1921.

1,412,346. Patented Apr. 11, 1922.

Fig. 2.

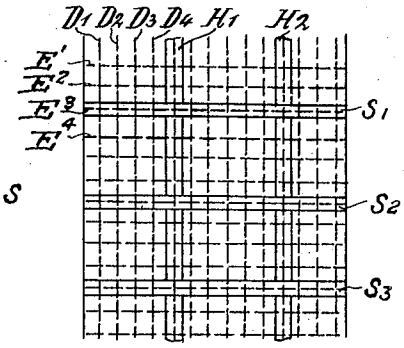


Fig. 1.

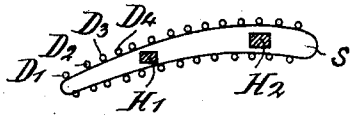


Fig. 3.

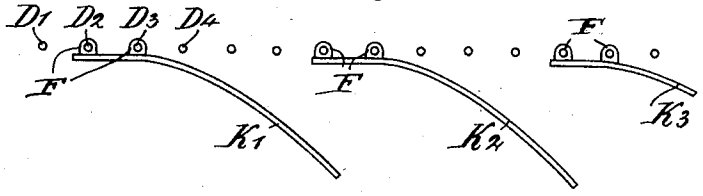
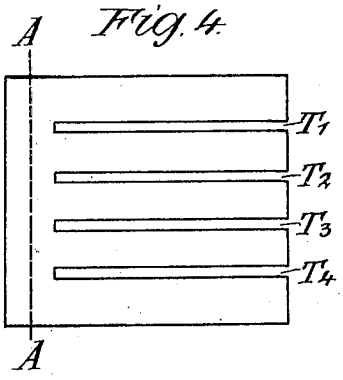


Fig. 4.



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UNITED STATES PATENT OFFICE.

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VIBRATING WING FOR FLYING MACHINES.

1,412,346. Specification of Letters Patent. Patented Apr. 11, 1922.

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To all whom it may concern:

Be it known that I, RUDOLF GOLDSCHMIDT, a citizen of Germany, and a resident of Berlin, Germany, have invented certain new and useful Improvements in Vibrating Wings for Flying Machines, of which the following is a specification.

This invention relates to the construction of vibrating wings for flying machines fitted with flaps adapted to close and thereby offer resistance to the air during the working stroke of the wing and to open on the upstroke so as to enable the wing to rise with a minimum of resistance.

The object of the present invention is to provide a construction in which the weight of wing is reduced to a minimum and in which the flaps in their closed position will lie close to the surface of the wing and adapt themselves to the contour thereof. Moreover, the present invention contemplates providing the wing with a reticulated frame or surface forming interstices longitudinally and transversely of the wing such that each flap is adapted to cover a plurality of longitudinal interstices and a plurality of transverse interstices, said flaps being distributed over the whole of the reticulated surface so that the resistance to the upward movement of the wing is reduced to a minimum.

According to the present invention the vibrating wing comprises a reticulated frame or surface, and a plurality of flaps on one side thereof, the flaps being slit or slotted at intervals, preferably from the free edge of the flaps to a distance from the opposite or fixed edge thereof. The flaps are constructed of flexible or pliable material and the foregoing construction thus enables the flaps to adapt themselves both in the longitudinal and transverse direction to the contour of the wing, when the flaps are in their closed position, thus enabling the flaps also to be made of such a size as to overlap a plurality of longitudinal and transverse interstices in the recticulated frame. Moreover, the flaps may be sufficiently light in weight as not to excessively increase the weight of the wing. It is important also that the flaps should readily adapt themselves to the contour of the wing in order to adapt themselves to warping or twisting of the wing frame.

In order that the invention may be more clearly understood reference is hereinafter made to the accompanying drawings illustrating the preferred construction of the improved vibrating wing by way of example.

Fig. 1 is a transverse section through the wing.

Fig. 2 is a fragmentary plan of the skeleton frame-work of the wing.

Fig. 3 is a detail section showing three of the flaps in open position, and

Fig. 4 is a plan view of one of the flaps.

As shown on the drawings, the wing may be of the usual aerofoil section, being built of longitudinal spars H^1 and H^2 and transverse ribs S^1 S^2 S^3. The structure thereby formed is covered with a reticulated frame or surface preferably comprising longitudinal wires or cords D^1 D^2 D^3 D^4, etc., and transverse wires or cords E^1 E^2 E^3 E^4, etc. The wires or cords may be of either circular section, stream-line section or in the form of flat strips and instead of constructing the reticulated surface of wires as illustrated on the drawing, it may be in the form of wire netting or perforated metal. Mounted on the aforesaid reticulated surface is a plurality of flaps K^1 K^2 K^3, etc. of the form illustrated in Figs. 3 and 4. The flaps, one of which is shown to an enlarged scale in Fig. 4, are preferably of such dimensions as to overlap a plurality of interstices between the wires D^1 D^2 D^3, etc. and also a plurality of interstices between the wires E^1 E^2 E^3, etc. The flaps are preferably mounted on the longitudinal wires as illustrated in Fig. 3 for which purpose they may be provided with a lug or lugs F threaded upon longitudinal wires. The flaps may be of very thin sheet steel of such a thickness as to enable the flaps in their closed position to rest against the wires and adapt themselves to the contour of the wing or the flaps may be made of rubber or other flexible or pliable material. It will be understood that the meshes or interstices between the wires must be of sufficiently small size to efficiently support the flaps in their closed position and that consequently the size of the mesh will depend upon the flexibility or pliability of the flaps.

In order to enable the flaps to adapt themselves to the contour of the wing in the longitudinal direction, that is to say, in the

direction parallel to the line A—A in Fig. 4, the flaps are slit or slotted as at T^1 T^2 T^3 and T^4 in Fig. 4 so as to produce a plurality of narrow tongues.

The slots or slits T^1 T^2 T^3 and T^4 may be covered by a light skin of rubber, silk, or like material or a plurality of similar hinged covering flaps may be provided, adapted to alternate with the flaps K^1 K^2 K^3 etc. so as to cover and uncover the slots or slits T^1 T^2 T^3 and T^4 therein. The covering flaps may be mounted in a similar manner to the flaps K^1 K^2 K^3 and may be similarly slotted or slit.

Claims.

1. A vibrating wing for flying machines comprising a reticulated frame and a plurality of flaps on one side thereof having slits at intervals therein.

2. A vibrating wing for flying machines comprising a reticulated frame and a plurality of flaps on one side thereof, having slots extending from one edge of the flaps to a distance from the opposite edge thereof.

3. A vibrating wing for flying machines comprising a reticulated frame and a plurality of flaps on one side thereof having slots therein extending at a distance from the fixed portion at right angles thereto.

4. A vibrating wing for flying machines comprising a reticulated frame forming longitudinal and transverse interstices and a plurality of slit flaps in both the longitudinal and transverse direction of the wing on one side thereof, each of said flaps being adapted to cover a plurality of longitudinal interstices and a plurality of transverse interstices.

5. A vibrating wing as specified in claim 1 having a covering for the slits at one side thereof.

6. A vibrating wing as specified in claim 1 having flap coverings for the slits at one side thereof.

7. A vibrating wing as specified in claim 1 having a plurality of flap coverings alternating with the flaps so as to cover and uncover the slits therein.

RUDOLF GOLDSCHMIDT.