J. G. A. KITCHEN & I. H. STOREY.

FLYING MACHINE.

APPLICATION FILED DEC. 1, 1913.

1,101,510.

Patented June 23, 1914.

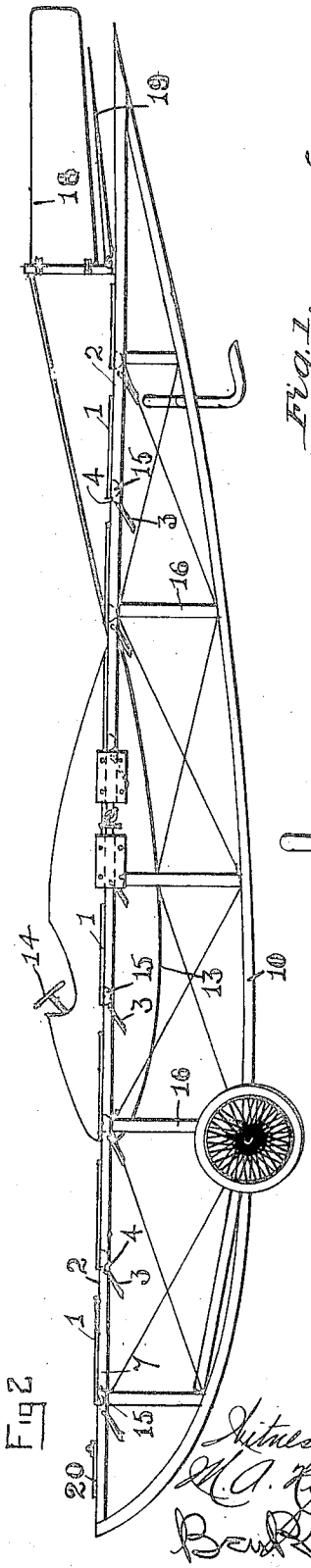

Fig. 2.

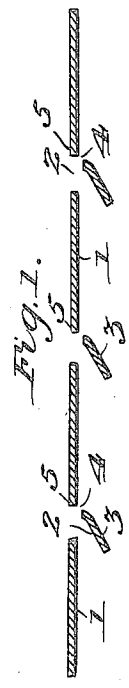

Fig. 1.

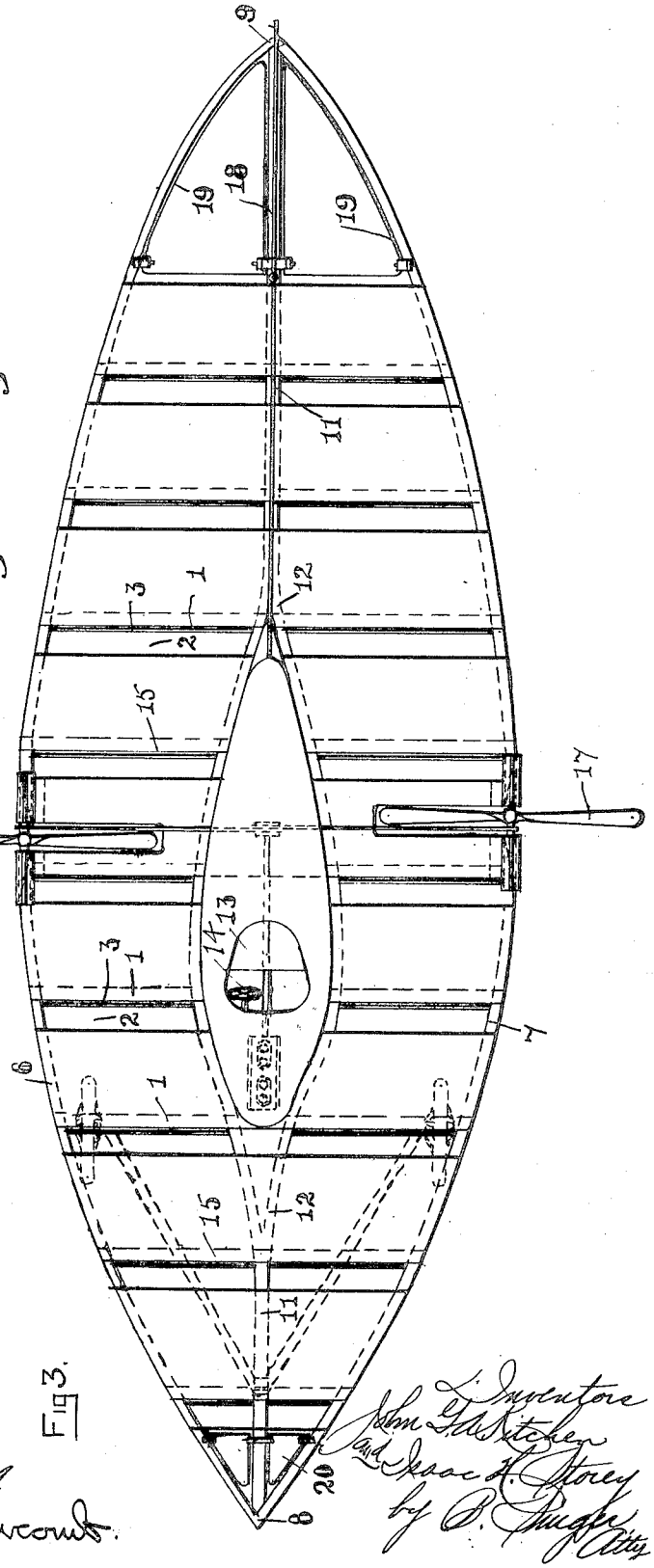

Fig. 3.

Witnesses:
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by B. Singer Attys

UNITED STATES PATENT OFFICE.

JOHN GEORGE AULSEBROOK KITCHEN AND ISAAC HENRY STOREY, OF LANCASTER, ENGLAND.

FLYING-MACHINE.

1,101,510. Specification of Letters Patent. Patented June 23, 1914.

Application filed December 1, 1913. Serial No. 804,127.

To all whom it may concern:

Be it known that we, JOHN GEORGE AULSEBROOK KITCHEN and ISAAC HENRY STOREY, subjects of the King of Great Britain and Ireland, residing at Lancaster, in the county of Lancaster, England, have invented new and useful Improvements in Flying-Machines, of which the following is a specification.

This invention relates to flying machines with plane supporting surfaces, and consists in improvements having for their object to make the whole extent of supporting area equally efficient for the full depth longitudinally of the machine when such area is more extensive longitudinally than transversely, whereby greater rigidity of construction, compactness of form and stability in flight are obtained.

It is well known that plane supporting surfaces arranged with the area of greater extent longitudinally of the machine than transversely are inefficient, or the surface extending beyond such dimensions in which the ratio of depth to width is small, is useless for supporting or lifting purposes. It is also well known that a deflected or a cambered leading edge margin increases the efficiency of the plane supporting surfaces up to a certain depth thereof. It is generally assumed that the efficiency of the deflected or cambered edge margin is due to a partial vacuum or decreased air pressure on the upper side of the plane surface, which extends for a comparatively short distance rearwardly, caused by a head current meeting the deflected or cambered edge margin, and experiments we have made tend to confirm this.

Now according to our invention, the supporting area, more extensive longitudinally than laterally, is interrupted by openings into a series of shallow sections, the openings extending laterally the full width of the supporting area and in depth sufficient to attain the object aimed at as hereinafter stated. Below each opening we provide a separate deflector the object of which is to deflect the head current which will meet the deflectors of the whole series following the leading plane section, on the underside of the plane supporting area, and thereby each deflector will direct a current of air through the opening immediately preceding it so as to sweep over the plane surface immediately behind it and so subject each plane section to the action which it is assumed takes place with an efficient single shallow plane. We have no wing surface in the sense of wings being defined as planes projecting laterally to a greater distance than the dimension of their depth, in other words wings which are long and narrow.

In the drawings attached hereunto, Figure 1 represents diagrammatically in longitudinal sectional elevation, a series of supporting sections in parallel relationship one behind the other longitudinally of the machine with deflectors arranged in accordance with our invention. Fig. 2 represents an aeroplane constructed with planes and deflectors arranged in accordance with our invention, in longitudinal elevation and Fig. 3 represents a plan of the same.

Referring to Fig. 1. The sections 1 are shown flat and in one plane longitudinally of the machine, and are fixed with an opening 2 between them all in parallel relationship transversely to the direction of flight. The width or depth of the space 2 is determined by experiment and also the width or depth of the sections 1. The deflectors 3 consist of narrow bars which are fixed at a suitable obtuse angle in relation to the sections and below the openings 2, a narrow opening 4 being left between the upper edge of the deflector and the front edge 5 of the plane. These deflectors extend for the full length of the leading edges 5 of the sections 1. The deflectors may be flat or curved cross-sectionally as shown.

Referring to Figs. 2 and 3. The aeroplane hereby illustrated embodies our improvements, alike in the employment and arrangement of the deflectors and in the design of the machine. The frame comprises curved side members 6 and 7 meeting at the front 8 and rear end 9; and a keel-like member 10 formed as a skid at the front end by curving it upward to meet the frame members 6 and 7 from the part of its greatest depth, and from the latter point converging to the rear end 9 where it joins the members 6 and 7 as shown. There is a central longitudinal member 11 between the ends of the frame, and this member is bifurcated at 12 to admit of the body represented by 13, in which are the seats, motor, tanks and controlling gear. The controlling wheel is represented by 14. Transverse stays such as 15,

Fig. 2, are provided at intervals to stiffen the frame work and bind the longitudinal members together. There are also vertical struts 16 between the keel member 10 and the longitudinal member 11. The sections 1 which are shown as flat in Fig. 1, are fixed at their ends to the side members 6 and 7 and may rest upon the transverse stays 15 as shown. The deflectors represented by 3 are fixed between the side members 6 and 7 in any suitable way, the space between the top edge of the deflector and the front edge 5 of the plane being represented by 4. The machine is illustrated with two screws or propellers 17 disposed centrally in the frame sides, and it is provided with a rudder 18 and elevators 19 arranged and operated in the usual way. Additional elevators such as 20 may be employed at the front end as illustrated. The several sections forming the main supporting area, may have suitably curved or cambered surfaces.

What we claim as our invention and desire to protect by Letters Patent of the United States, is:—

1. In a flying machine a supporting surface comprising a series of sections disposed in parallel position with respect to each other and at right angles to the direction of motion of the machine and separated by openings between them, the transverse dimension of said sections as a whole being less than the length occupied by them, and a deflecting surface in front of the leading edge of each section of the supporting surface forming an obtuse angle therewith and arranged to direct the head current met by each deflecting surface to the upper surface of each following section through the opening before it.

2. In a flying machine, a supporting surface comprising a series of sections disposed in parallel relationship with respect to each other and at right angles to the direction of motion of the machine, the rear and the front edges of the sections on each side of the longitudinal center line being in the same plane and separated by spaces narrower than the width of the sections, and a separate deflector beneath each such space forming an obtuse angle with the succeeding section, the rear edge of each deflector being in advance of and separated by a narrow space from the front edge of the succeeding section, and the front margin of the said deflector extending under the rear edge of the preceding section.

3. In a flying machine, the combination of a plurality of sections with openings between them and forming a supporting surface of greater longitudinal than transverse dimension, a plurality of separate deflectors one in front of each section at an obtuse angle thereto and separated therefrom, and extending under the rear part of the preceding section.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

JOHN GEORGE AULSEBROOK KITCHEN.
ISAAC HENRY STOREY.

Witnesses:
JAMES HARRISON SHEPHERD,
CHARLES BERRY.