

March 15, 1938.

R. WEICHARDT ET AL

2,110,966

LANDING SAIL

Filed June 5, 1936

Fig. 1

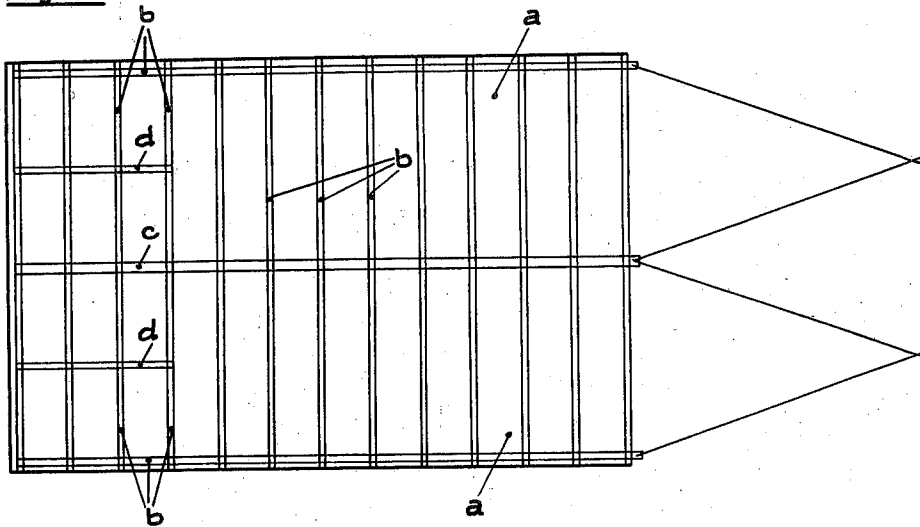
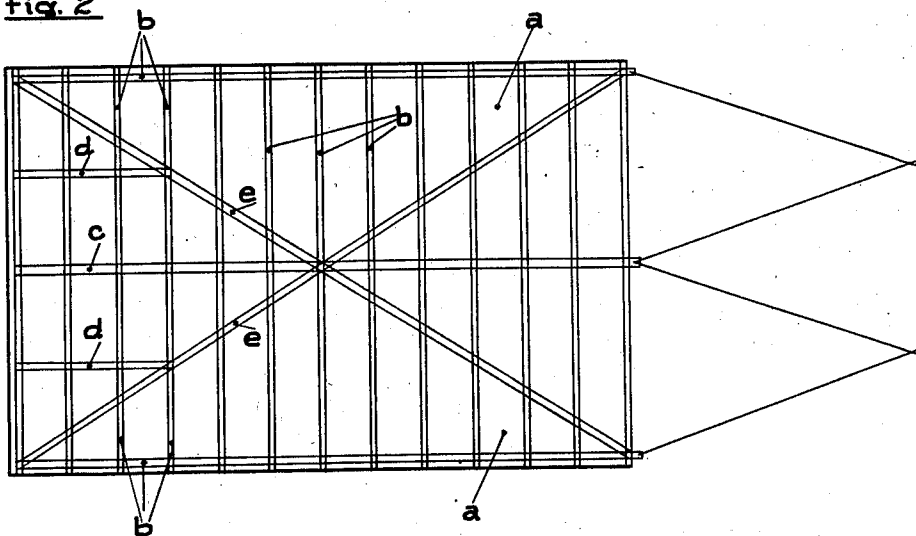


Fig. 2



Inventors:
Rudolf Weichardt and
Willy Freistadt
By *Emil Bönnelycke*
Attorney

UNITED STATES PATENT OFFICE

2,110,966

LANDING SAIL

Rudolf Weichardt and Willy Freistadt, Bremen,
Germany, assignors to Krafft & Weichardt,
Bremen, Germany, a corporation of Germany

Application June 5, 1936, Serial No. 83,787
In Germany June 6, 1935

2 Claims. (Cl. 114—43.5)

The landing sails known hitherto, of sailcloth or the like either have no stiffening at all and are therefore much affected by the action of external forces, in particular the blows of waves, or they are provided with more or less hard stiffening as by laths of wood, basket-work or rubber. These laths are arranged transversely to permit the sail to be rolled up on a drum. The duty of a sail with such transverse laths is to yield corresponding to the pressure of the float keels when it is loaded by an aircraft, the laths assuming a carrying-deck-like formation whereby the necessary upthrust for supporting the aircraft is produced. At the same time however the sail itself is bulged upwardly by the pressure of the water. The sail therefore on its underside presents the form of uniformly alternating hills and valleys. The following faults arise from this: The laminar flow of the water beneath the sail is converted into turbulent flow, which towards the front of the sail is still slight, but becomes greater and greater towards the rear. At low towing speeds the eddying of the water is still small, but at high speeds becomes so great that the laths in the rear part of the sail begin to swing and thrash violently thus endangering the floats of the aircraft. The known longitudinal tying together of the laths can only overcome this fault to a limited extent. Apart from this, the turbulent flow produces an increased resistance to towing.

The present invention overcomes the said faults. The sail is spread in such a manner by soft or flexible steel bands which owing to their softness are in themselves unable to give support, that wrinkling together or folding over of the sail by the action of wind and waves is hindered and its surface maintained fully extended in any sea. The sail with its steel bands adapts itself very smoothly to the crests and troughs of the waves. Accordingly the waves and the upthrust act upon the floats of the aircraft almost exactly as in the open water and the only function left to the sail is to act as a catching sheet. Further as the steel bands involve practically no projection on the upper and under surfaces of the sail, no hill and valley formation can be produced on the under-side of the sail when it is loaded by an aircraft. Conversion of the laminar flow of the

water into turbulent flow is thereby prevented. Thrashing of the rear part of the sail through eddying of the water also cannot occur. In addition, any damage to the aircraft floats through thrashing is prevented since the sail is quite soft in spite of the steel spreading bands. The sail with the steel bands can be rolled directly upon a drum. Accordingly the steel bands can be attached to the sail in any desired longitudinal, transverse and diagonal arrangement.

Figures 1 and 2 of the accompanying drawing show diagrammatically two examples embodying the invention, in plan view. The sail is indicated by *a*, the transverse and longitudinal steel bands by *b*. A continuous steel band *c* is also provided in the longitudinal axis. Further the sail is spread a little more at the rear by additional longitudinal bands *d*. In the transverse direction the number of steel bands *b* is made particularly great because the blows of waves from the sides are most frequent and most inconvenient. The embodiment of Figure 2 also has diagonal bands *e*. The steel bands can be attached all on one side of the sail, or opposite one another on both sides, or can be sewn into the sail cloth and each preferably has a thickness approximating 2 mm.

What is claimed is:—

1. A landing sail for the reception of aircraft comprising a sheet of deformable material, and a plurality of spaced spreaders composed of steel bands of such great flexibility that while the sail is prevented from wrinkling or folding together in the transverse and longitudinal directions, transmission of dynamic thrust on the parts of the surface in the water distant from the aircraft floats to the latter cannot occur and the parts of the sail not held by the floats can freely adapt itself to the form of the water surface, the thickness of the spreaders being so small that as smooth as possible surfaces against which the water flows and which receive the aircraft are obtained and the spreaders being arranged both longitudinally and transversely of the sheet.

2. A landing sail according to claim 1, in which a pair of spreaders composed of steel bands are provided each diagonally across the sheet.

RUDOLF WEICHARDT.
WILLY FREISTADT.