May 3, 1932. H. HEIN 1,856,332

LANDING DEVICE FOR AIRCRAFT

Filed Nov. 17, 1931

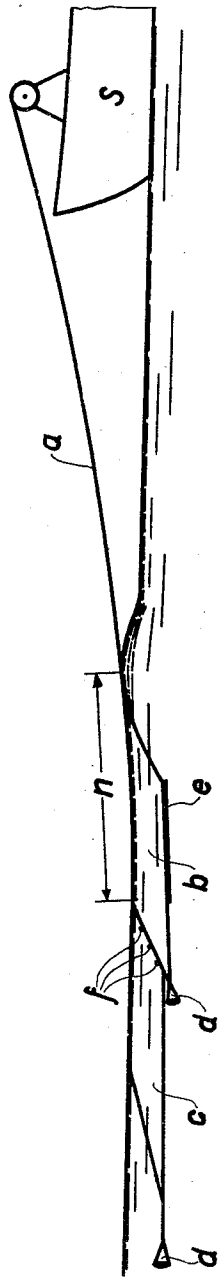


Fig.1.

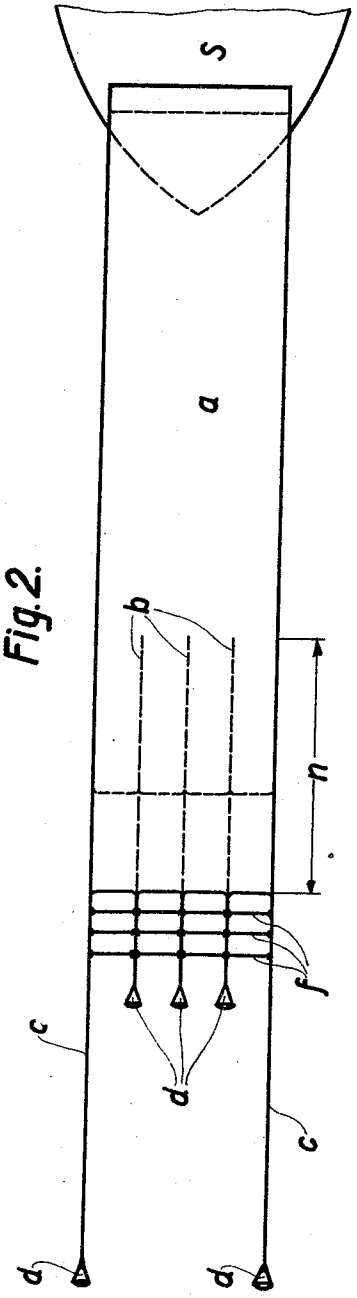


Fig.2.

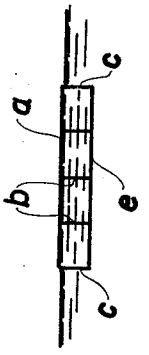


Fig.3.

Inventor:
Hermann Hein
By Emil Bomelyke
Attorney

Patented May 3, 1932 1,856,332

UNITED STATES PATENT OFFICE

HERMANN HEIN, OF BREMEN, GERMANY

LANDING DEVICE FOR AIRCRAFT

Application filed November 17, 1931, Serial No. 575,662, and in Germany November 20, 1930.

Various constructions of landing device for aircraft are known. They consist in most cases of a sail cloth towed from the stern of a water craft, the sail cloth being brought to a determined angle to the surface of the water and stretched, by the speed of the towing craft. The stretching is in most cases produced by the provision beneath the part of the sail cloth lying on the surface of the water of resistance bodies, the resistance to movement of which produces the tension in the landing device. It has been found that at the high speeds involved such a resistance to motion produces such eddying at the end of the landing device, that landing of the aircraft on the device is impossible. This disadvantage is also present in landing devices which are provided with a net like resistance body at the rear end, acting against the water stream. The resistance is enormously increased by such a resistance body and eddying at the rear end of the device thus increased particularly at high speeds; there also occurs a considerable step like drop in water level behind the device which makes the running of the aircraft on to the device much more difficult or even impossible. The power needed for towing such a landing device at the necessary speed for the landing of an aircraft reaches a value which in practice the apparatus can hardly withstand and can only be obtained with very powerful engines in the towing vessel.

The object of the present invention is a landing device which overcomes the above mentioned disadvantages.

Beneath the rear part of the sail like device, gliding on the water, which is to carry the aircraft, is provided a number of guide surfaces forming longitudinal channels, which have the effect of smoothing out the water and also the screw stream as well as of preventing lateral lurching of the device. All resistance bodies opposing the stream in the region of the landing device are avoided. The carrying capacity of the device depends not on its being held taut like a jumping sheet used as a fire rescue device, but on a skimming plane effect. A step like drop in the water level at the rear end of the device does not occur since the guide surfaces ensure free regular flow.

The guide surfaces consist advantageously of vertical or downwardly directed longitudinal fins of sail cloth or other suitable material. The outer vertical fins running in line with the longitudinal edges of the device are increased considerably in length so that the calming of the water surface behind the device is improved between these outer fins. Further the inner fins are also continued, downwardly inclined, beyond the rear edge of the sail. To the ends of all fins resistance bodies can be attached which stretch the whole system and hold the fins and device in the right position suitable for proper skimming plane effect. The lower edges of the vertical fins can be connected by a horizontal fin parallel with the landing device, so that a closed guideway is formed for the water current, whereby a further smoothing of the wake behind the device is produced and undesirable vertical movement of the device hindered. Behind the rear edge of the sail an upwardly inclined runway can be formed by means of one or more ties connecting the inclined upper edges of the fins, on which runway the landing aircraft can descend at high speed without danger of damage.

An example embodying the invention is illustrated in the accompanying drawings. Figure 1 shows the landing device in longitudinal section, Figure 2 is a plan and Figure 3 a cross-section. The landing device a is towed by the craft S. The section on which the aircraft is to land is n. On the underside of the end part, say in the longitudinal portion n, are provided in this case 3 inner fins b and 2 outer, longer, edge fins c. The lower edges of all fins are connected by a horizontal fin e. At the ends of the fins b and c are provided resistance bodies d. Above the inclined rear edges of the fins b are in this case 3 cross ties f, which facilitate the aircraft settling on the sail. In the above described landing device, all devices damming up the water current beneath the sail are radically avoided; on the contrary, value is placed on the fact that a smooth water flow takes place beneath the sail, whereby a proper

skimming plane effect is produced at the end of the device.

What I claim is:

1. A sail-like landing device for aircraft which is towed by a moving watercraft, in which under the aircraft carrying end of the device guide surfaces are provided forming longitudinally running channels for smoothing out the wake and screw stream and preventing lateral lurching.

2. A sail-like landing device which is towed by a moving watercraft, in which under the aircraft carrying end of the device guide surfaces are provided, said surfaces being formed by vertical or downwardly directed fins which are extended beyond the rear edge of the device.

3. A sail-like landing device for aircraft having guide surfaces under its end carrying the aircraft, said guide surfaces being formed by downwardly directed fins, the lower edges of which are connected together over a certain range of length by a fin approximately parallel with the device.

4. A sail-like landing device for aircraft having guide surfaces on its underside formed by downwardly directed fins, the outer fins running in continuation of the outer edges of the device are longer than the inner fins.

5. A sail-like landing device for aircraft having guide surfaces on its underside and resistance bodies attached to the rear ends of the guide surfaces to hold the device stretched.

6. The combination of a sail-like landing device for aircraft having guide surfaces on its underside formed by downwardly directed fins, with an inclined runway allowing water to pass located beneath the water and adjoining the rear end of the device.

In testimony whereof I affix my signature.

HERMANN HEIN.