March 24, 1931. R. GIBBONS 1,797,767

AIRPLANE LANDING AND LAUNCHING APPARATUS

Filed June 15, 1927 2 Sheets-Sheet 1

Fig. 1.

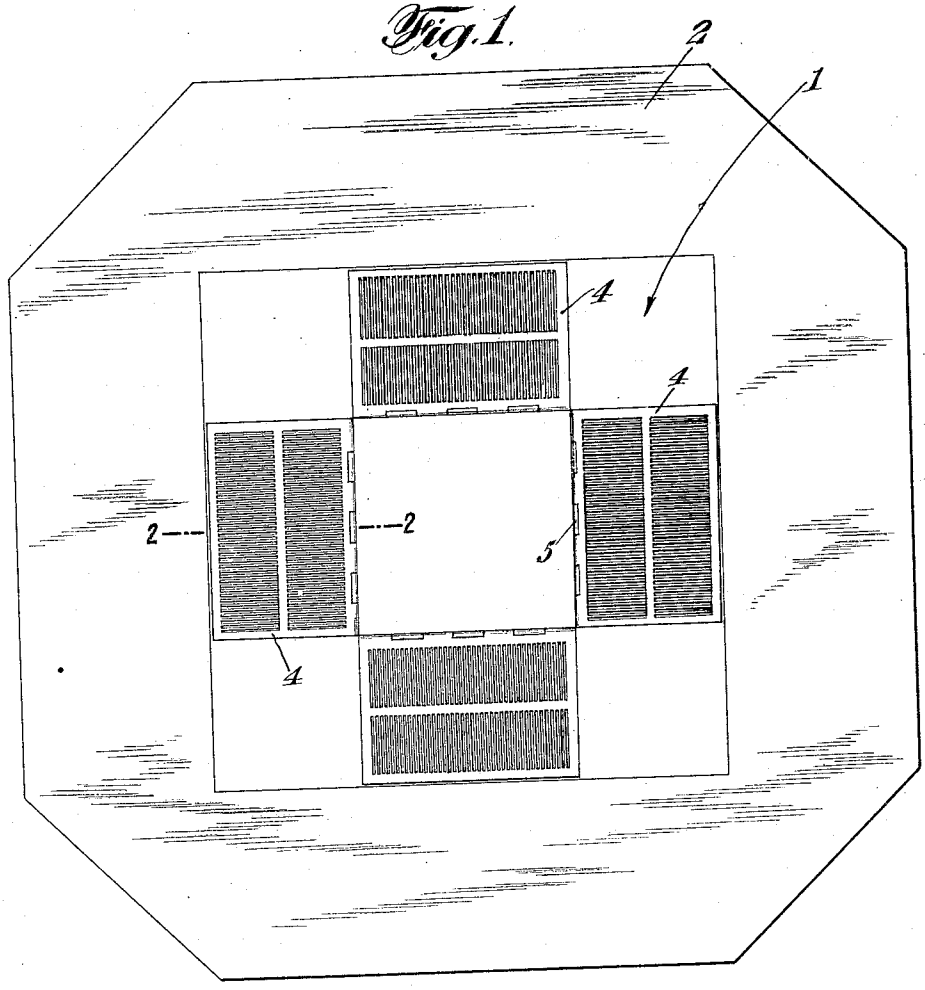
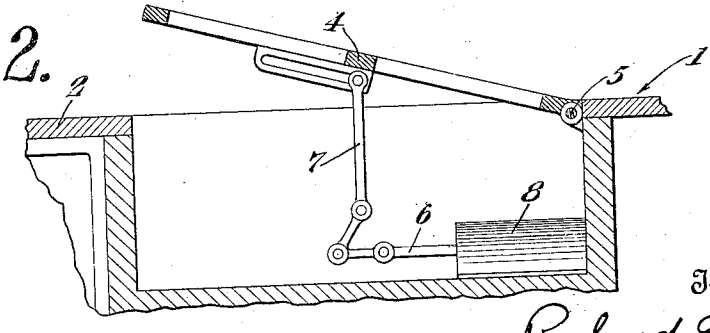


Fig. 2.



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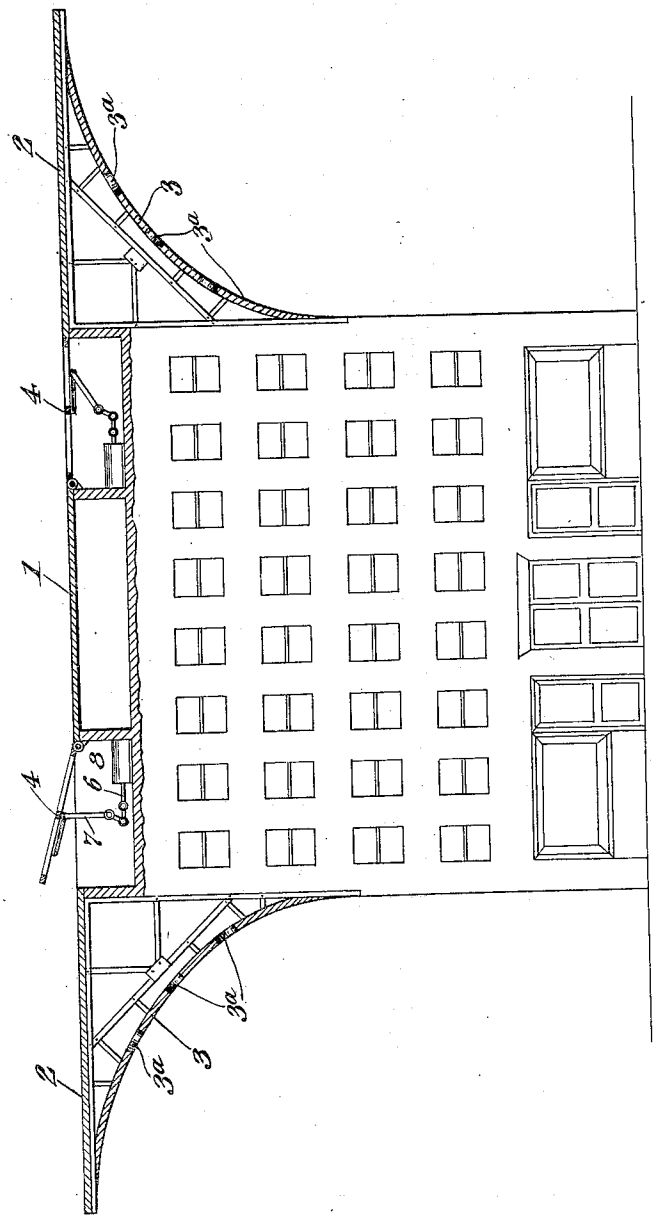


Fig. 3.

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Patented Mar. 24, 1931 1,797,767

UNITED STATES PATENT OFFICE

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AIRPLANE LANDING AND LAUNCHING APPARATUS

Application filed June 15, 1927. Serial No. 198,886.

The principal object of the invention is to provide an airplane landing and launching apparatus utilizing the tops of large structures, such as buildings, dock buildings, piers, rafts, ships, mooring structures, or natural prominences, fortifications, etc., wherein safe operating conditions may be obtained with a reduced expenditure for special construction and apparatus. Further objects and advantages of the invention will be in part obvious and in part specifically pointed out in the description hereinafter contained which taken in conjunction with the accompanying drawings, discloses a preferred embodiment of the invention. Such embodiment, however, is to be considered merely as illustrative of its principles. In the drawings—

Fig. 1 is a plan view of an apparatus constructed to operate in accordance with the invention.

Fig. 2 is a section on line 2—2 of Fig. 1, and

Fig. 3 is a side elevation with certain parts cut away of the structure shown in Fig. 1.

In accordance with the present invention a large structure, such as the top of a large building, may be utilized for landing or launching purposes, the top surface or roof 1 of the structure being used as a runway if comparatively flat, or a special top surface built for this purpose if necessary. Insofar as the dimensions of the structure may require, I also provide what I have referred to hereinafter as "ramps" 2 projecting out laterally from the top surface of the structure so as to overhang the sides thereof, and these ramps have undersurfaces 3 which are curved from the outer edge of the ramp gradually down to the side surface, with the result that air currents approaching the structure will be split by the ramp into an upper current which will pass evenly over the top surface 1 of the structure, and a lower current which will be deflected downwardly by the undersurface 3 of the ramp. A concave surface 3 is employed of such curvature that the air currents below the level of the ramp will follow evenly along such surface in being deflected downwardly. In this way substantially uniform air conditions may be maintained on the top surface of the structure due to the uniform horizontal air currents which will pass thereover, as contrasted to the disturbed air conditions which would exist if the air backing up against the side of the structure were permitted to pass upwardly so as to cause upward currents and high pressure near the edge of the surface 1 with probably some rarefaction and vortices at certain points over the surface 1. The ramps 2 thus avoid the necessity, in using large structures for landing purposes, of providing a landing surface which is much elevated above the top level of the structure and supported by skeleton construction, special towers or the like, high above the structure proper, so as to obtain uniform air conditions in landing. The undersurface 3 of the ramps and/or the side of the structures may be provided with opening 3*a* to relieve the volume of air which will tend to build up due to the downward deflection caused by the ramps and the upward deflection which will be caused by the sides of certain structures, the air thus relieved being exhausted through the interior of the structure or off at the sides of the structure which are parallel to the wind.

It will be understood that in some instances a structure may be available of sufficient length to make it unnecessary to use the ramp at its ends, in which case ramps at its opposite sides will be sufficient, but a structure will rarely be found available in congested districts which will have both sufficient length and width to permit safe landing with all different directions of wind without the use of ramps at least at the sides of the structure.

By the use of ramps as aforesaid, safe air conditions are maintained for landing against the wind, as regards directions of wind where the dimensions of the structure are so short as to make it necessary for the full effective runway length to be made available, and thus special turn table constructions need not be provided to enable a long runway to be adjusted angularly according to the direction of the wind.

In accordance with another aspect of the invention the top surface 1 is provided with one or more tiltably supported sections 4, each provided with mechanism to position them either in the general plane of the top surface or incline them toward one side of the structure. As shown four of these sections 4 are provided, each section being pivoted about a shaft 5 and adjustable by a suitable plunger 6 and rocking lever 7, the plunger 6 operating the cylinder 8; thus if the wind is approaching the top surface 1 from the left as the structure appears in Fig. 1, the left hand section 4 will be adjusted to inclined position and the remaining sections 4 will remain in the general plane of the top surface. The air plane will land upon the ramp 2 which appears at the right hand of Fig. 1 and pass onto the inclined section 4 above mentioned so that the inclination of the latter may assist in bringing the plane to rest. It will also be understood that these sections 4 may be provided with special guiding and retarding features of construction, such as shown in the prior patent to Richard Gibbons No. 1,560,775. dated November 10, 1925 or H. C. Mummert No. 1,582,188 dated April 27, 1926, which features however I have not considered it necessary to show or describe in detail herein.

As in the case of the ramps 2, only as many of the sections 4 need be employed as the dimensions of the structure require, it being generally necessary to provide at least two of them to be used when the direction of the wind is crosswise of the structure, and each section being inclined or tilted toward the respective far edge of the landing surface.

While a specific form of the invention has been disclosed, it will be obvious that many changes may be made therein without departing from its principles as set forth in the appended claims.

I claim:

1. An airplane landing and launching apparatus utilizing the top of a large structure having extensive top and side surfaces, which comprises a ramp projecting out from the top surface to overhang a side surface, the ramp having an under surface gradually curved to deflect downwardly air currents approaching below the outer edge of the ramp, whereby the air currents passing over the ramp onto the top surface of the structure will be split off from and left undisturbed by those below the level of the ramp, and means associated with said apparatus for relieving the excess air which tends to build up beneath the ramp.

2. An airplane landing and launching apparatus utilizing the top of a large structure having extensive top and side surfaces, which comprises a ramp projecting out from the top surface to overhang a side surface, the ramp having an undersurface gradually curved to deflect downwardly air currents approaching below the outer edge of the ramp, whereby the air currents passing over the ramp onto the top surface of the structure will be split off from and left undisturbed by those below the level of the ramp, the undersurface of said ramp being provided with openings to permit the relief of air therethrough.

3. An airplane landing and launching apparatus utilizing the top of a large structure having extensive top and side surfaces, said apparatus having openings associated with one or more sides of said apparatus for withdrawing air from the air zone which is located below the level of said top surface and outwardly of the corresponding side surfaces.

4. An airplane landing and launching apparatus utilizing the top of a large structure having extensive top and side surfaces which includes a ramp projecting out from the top surface to overhang a side surface, said apparatus having openings for withdrawing air from beneath said ramp.

In testimony that I claim the foregoing, I have hereunto set my hand this 10th day of June, 1927.

RICHARD GIBBONS.