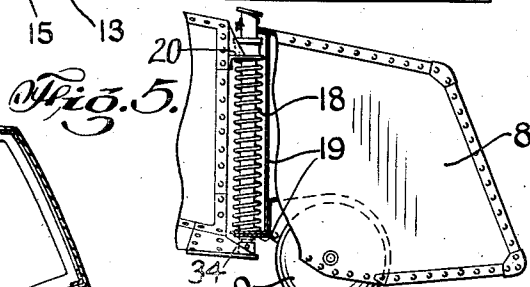
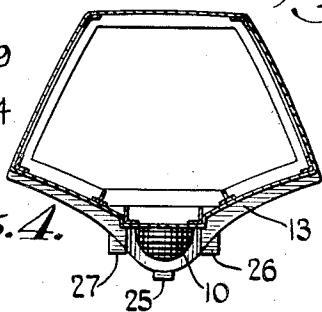
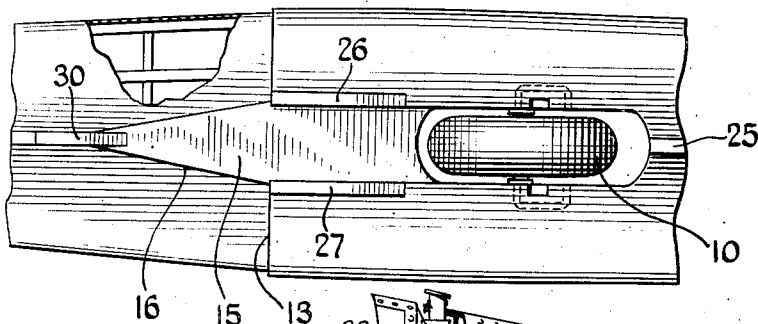
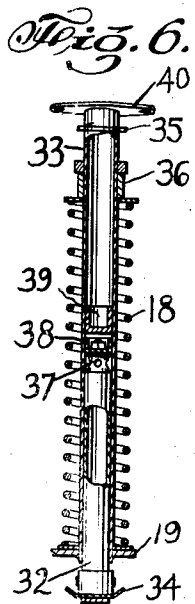
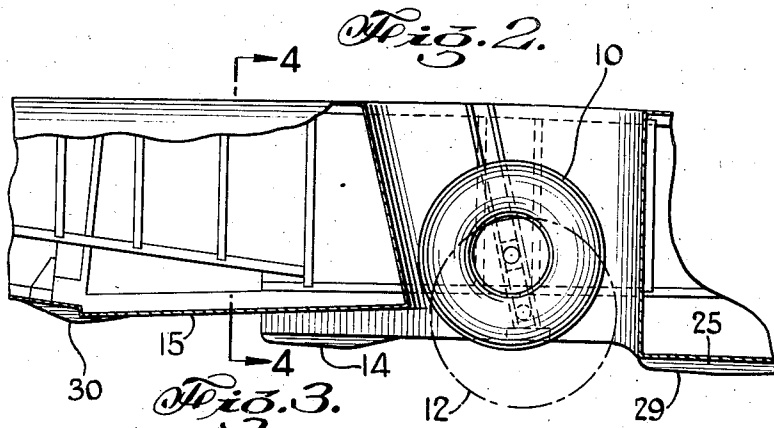
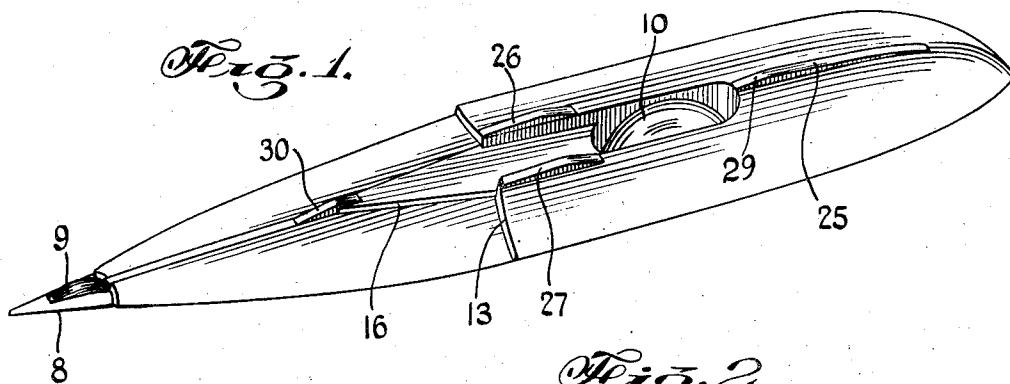


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AMPHIBIAN AIRCRAFT PONTON

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AMPHIBIAN AIRCRAFT PONTOON

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9 Claims. (Cl. 244—2)

The present invention relates to amphibian aircraft and has for an object to provide an improved pontoon for such craft.

Amphibian craft have been provided with pontoons having wheels which for landing on the ground are projected into ground engaging position and for landing on water are retracted into wheel wells in the pontoon. When the pontoon is moving rapidly through the water the well, if opening below the water line, offers a very considerable resistance to the movement of the pontoon through the water by causing excessive eddy currents and swirling of the water. In order to overcome this difficulty it has been proposed to close the wheel well when the wheel is retracted but this arrangement offers certain mechanical difficulties and from a practical point of view is not satisfactory.

The present invention affords an arrangement for reducing the resistance caused by the wheel well by providing a channel extending rearwardly from the wheel well. The channel acts as a race way permitting a free flow of the water rearwardly from wheel well and very much reduces the resistance to movement through the water.

The invention provides also an effective arrangement of skates or skids on the bottom of the pontoon for landing on or taking off from ice.

A novel shock absorbing auxiliary landing wheel is also afforded as a feature of the invention.

The nature and objects of the invention will be better understood from a consideration of a particular illustrative embodiment for the purpose of which description reference should be had to the accompanying drawing forming a part hereof and in which:

Figure 1 is a perspective view of the bottom of a pontoon embodying the invention,

Figure 2 is a central sectional view,

Figure 3 is a bottom plan view,

Figure 4 is a transverse sectional view of the pontoon taken on the line 4—4 of Figure 2,

Figure 5 shows in side elevation the rudder and tail wheel with the shock absorbing connection to the body of the pontoon, and

Figure 6 is a detail view partly in section of the vertical rudder shaft and steering post.

The pontoon shown for the purposes of illustration is in general of the hollow sheet metal type, in which the aluminum sheathing 6 is supported by an interior frame work 7, made up of angle bars and T-bars. At the rear end a rudder 9 with an auxiliary ground wheel 9 is secured by a shock absorbing connection operable especially

when landing on the ground. A wheel 10 is adjustably mounted in a wheel well 11 and may be projected to the position indicated at 12 on dotted lines in Figure 2, for landing on the ground or retracted to the position indicated in full lines for landing on the water. In accordance with the present invention the rear wall of the wheel well is cut away, to avoid the usual obstruction to the flow of water rearwardly. By this arrangement the usual resistance to movement of the pontoon due to the eddying of the water in the wheel well is very much reduced. The particular shape of the bottom of the pontoon rearwardly of this well may vary considerably. In the preferred arrangement illustrated in which the pontoon is stepped as indicated at 13, the bottom of the pontoon is recessed to provide a channel 14 extending rearwardly out through the stepped portion to permit a free flow of water from the wheel well rearwardly in the raceway thus formed. The channel is shown as of the same width as the wheel well but this width may be varied as conditions require. The generally horizontal top of the inverted channel 14 is preferably continued rearwardly in the same plane beyond the step and merged into the contour of the bottom of the pontoon rear portion. The merging, however, is preferably not smooth but a slight step is formed between the flat face 15 as continued rearwardly and the bottom of the pontoon. Such a step is clearly shown at 16 in the drawing. It is noted also that the step lies at an angle diagonally of the length of the pontoon as the face 15 forms a V.

The surface 15 is shown as sloping slightly upwardly toward the rear. This slope is believed to be advantageous without unduly retarding free movement and may even be increased considerably if desired even to the point of materially shortening the channel.

When landing on or taking off from the ground the load is taken by the wheel 10 projected into its lowermost position and by the auxiliary wheel 9 carried by the rudder. The shock of engagement of the auxiliary wheel is resisted by a shock absorbing connection of the rudder to the body of the pontoon. As shown in Fig. 5, a shock absorber spring 18 is compressed between the bracket 19 on the rudder and the bracket 20 on the pontoon. The wheel 9 has a solid rubber tire to afford a measure of resilience.

For landing on ice and more particularly for taking off therefrom, it is desirable to have a skate structure on the landing gear. This is provided in the arrangement shown by applying to

the bottom of the pontoon steel or other hard metal strips. A strip 25 is applied to the forward portion of the pontoon along its center and strips 26 and 27 are applied rearwardly of the wheel at the sides of the channel which extends rearwardly from the wheel well.

These three strips are shaped to provide skate surfaces all lying on one plane and which may by bearing on the ice effectively support the full weight of the craft. In order that the bearing surfaces may lie in the same plane the rear end of the strip 25 is tapered as indicated at 28 and the strips 26 and 27 are correspondingly shaped. A protective member 30 of similar metal is also provided at the rear end of the step 16 and is so formed that in case of engagement with the ground or ice it will also serve as a skid.

As indicated in Figs. 5 and 6, the pivotal connection between the rudder and the bottom of the pontoon comprises telescoping sleeve members 32 and 33. The inner member 32 is rigidly secured in a bracket 34 on the pontoon and slides in the outer sleeve 33 which is rigidly connected to the rudder at its upper end as indicated at 35. Upon upward movement of the rudder the sleeve 33 slides upwardly on the sleeve 32 and through the bearing 36 in the bracket 20 on the pontoon. In order to prevent too sudden return movement of the rudder 8 downwardly under the action of the spring 18 a dash-pot is provided within the sleeve 33. As shown, a plug 37 is rigidly secured to the top of the sleeve 32, preferably welded thereto and this plug carries a leather washer 38. Above this washer a plug 39 is rigidly secured in the sleeve 33. Ordinarily an air dash-pot is satisfactory as distinguished from an oil dash-pot in which the oil is arranged to pass through a small aperture in the plug 39 to a closed chamber in the sleeve 33 above the plug. A cross-bar 40 is secured to the top of the sleeve 33 to provide suitable connection for steering.

The foregoing particular description is illustrative merely and is not intended as defining the limits of the invention.

I claim:

1. A pontoon for amphibian aircraft having a wheel well, a wheel retractable into said wheel well and an inverted channel opening from said wheel well and extending rearward along the bottom of the pontoon and terminating in a step toward the rear of the pontoon.

2. A pontoon for amphibian aircraft having a wheel well, a wheel retractable into said wheel

well and an inverted channel opening from said wheel well and extending rearward along the bottom of the pontoon and terminating in a step extending diagonally rearward along the bottom of the pontoon.

3. A pontoon for amphibian aircraft having a wheel well, a wheel retractable into said wheel well and an inverted channel opening from said wheel well and extending rearward along the bottom of the pontoon and terminating in a step extending in a V rearwardly along the bottom of the pontoon, the bottom of the channel sloping downward toward the rear of the pontoon.

4. A pontoon for amphibian aircraft comprising a stepped pontoon body having a wheel well forward of the step and an inverted channel of substantially the width of the wheel well extending rearward from the wheel well along the bottom of the pontoon.

5. A pontoon for amphibian aircraft comprising a stepped pontoon body having a wheel well forward of the step, a wheel adjustable in said well, the under-side of the pontoon being recessed rearward of the wheel well to provide a raceway permitting free flow of water rearward from the well, substantially as described.

6. A stepped pontoon for amphibian aircraft having a wheel well forward of the step, a wheel adjustable in said wheel well, a channel extending rearward from said wheel well to and beyond the step and merging into the pontoon body rearward of the step, substantially as described.

7. A pontoon for amphibian aircraft having a main float portion, a rudder member pivoted to the rear end of the main float portion and movable vertically relative thereto, a resilient shock absorbing means between the rudder member and the float portion to resiliently resist forces acting upwardly on the rudder and a dash pot yieldably resisting sudden downward movement of the rudder.

8. A pontoon for amphibian aircraft comprising a pontoon body having a wheel well, a step rearwardly of the wheel well and a channel extending rearwardly from the wheel well through the step.

9. A pontoon for amphibian aircraft comprising a pontoon body having a wheel well and an inverted channel extending rearwardly from the wheel well and recessed into the bottom of the pontoon.

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