

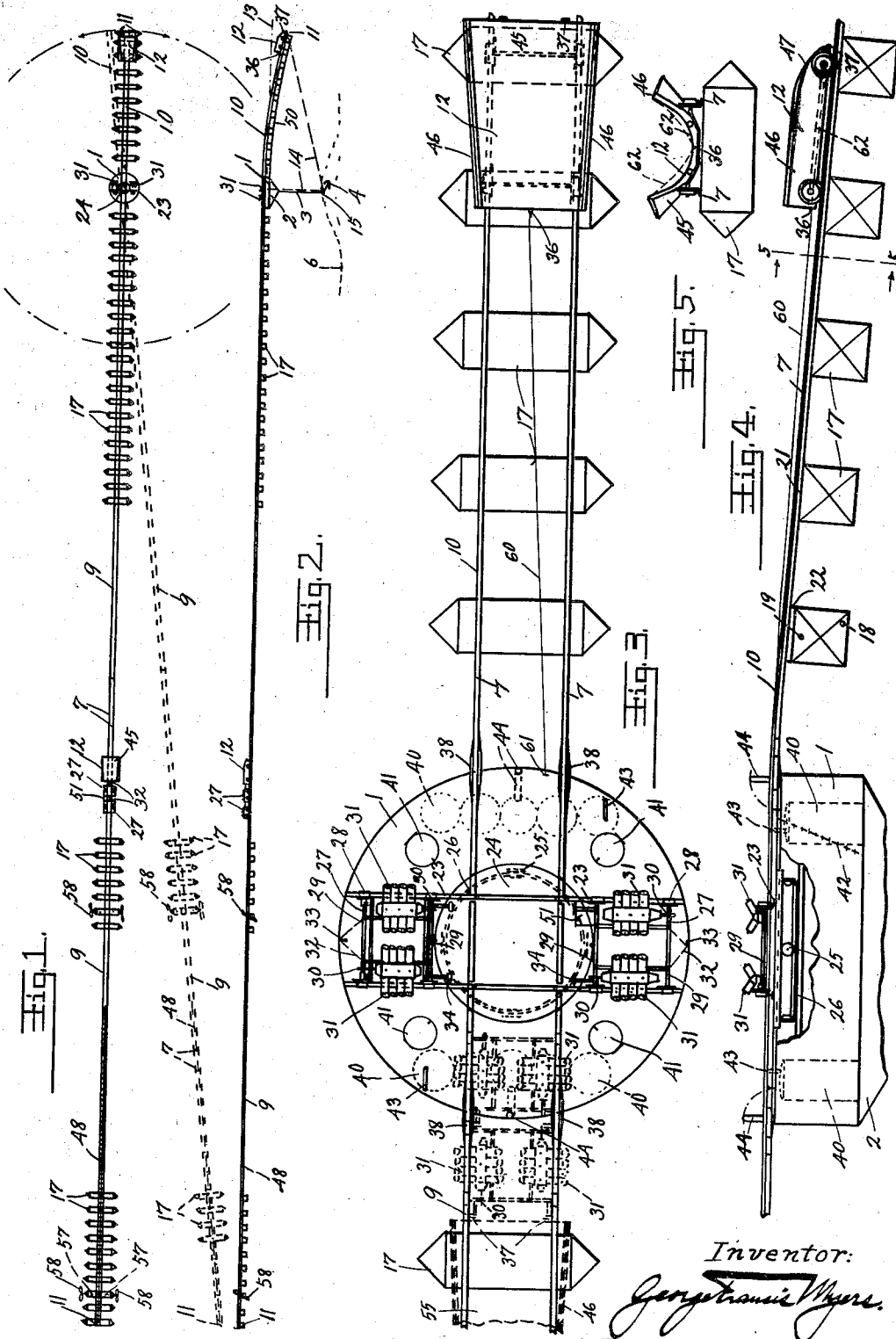
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METHOD AND APPARATUS FOR LAUNCHING SEAPLANES

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METHOD AND APPARATUS FOR LAUNCHING
SEAPLANES

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This invention relates to flying machines, and particularly to the art of launching the same from the water.

It has for its object, among others, to provide a runway on the water for hydroaeroplanes and especially for flying boats so that the same may take off with very heavy loads.

Other things being equal a land plane is lighter in weight than a sea plane and can get off the land much more easily with a heavy load, much of which is pay load. But for long trans-oceanic flights the land plane is a dangerous transport, for if it should have to alight on the water it is lost with all on board.

On the other hand a flying boat can be built that will stand quite a rough sea in case of a forced landing, but due to the greater weight of the boat and its inability to get off the water easily, it cannot carry a heavy pay load.

The amphibian would seem to be the solution of the problem, but here again we have the weight of the wheels, articulated struts and mechanism therefor and the service motor to drive the same when retracting, the sum total of which amounts to quite a great deal on very large vessels such as will be used in crossing the oceans, and by just that amount reducing the pay load.

A track runway might be laid on the land and the flying boat placed on a wheeled truck for the takeoff; but this arrangement would have at least three grave disadvantages: In the first place the flying boat must be lifted off the water by means of cranes or the like, which is a costly and very delicate operation requiring time and skill especially in windy weather; or expensive ramps must be built. Then after the machine is placed on the truck ready to start it must take the wind into account even though the track is laid into the prevailing wind; for there would be many days when it would encounter side winds and the track would be of little or no use. Also the track being laid over the land if it should happen that the pilot should allow the machine to leave the track believing that everything was propitious for a takeoff, but should find out that he must land immediately, he would have to set the hull of the flying boat down on the inhospitable land where it was not designed to alight and it would probably be damaged; but even if not damaged it would require much time and labor to reset the machine on the track again.

But in the hereindescribed invention all of these disadvantages are overcome by laying the track upon the water. The flying boat does not have to be lifted out of its element by extraneous

means, but instead taxis up a runway directly onto the track upheld by pontoons. If the wind changes even while the machine is poised on the track, the track can be turned so that the machine can take off right into the wind no matter from which direction it may blow. And if the pilot makes a mistake in his takeoff and has to land forthwith he can alight on the water where the machine was designed to land, and then quickly and easily turn around and start over again.

The invention also consists in certain other features of construction and in the combination and arrangement of the several parts to be hereinafter described, illustrated in the accompanying drawing and specifically pointed out in the appended claims.

Figure 1 illustrates an abbreviated plan view of the preferred embodiment of the invention, one of the possible changes of direction of the track being shown in dotted lines.

Fig. 2 is a side elevation of Fig. 1.

Fig. 3 is a plan view on an enlarged scale of part of the track and pontoons, and the main float with its cross tracks and power trucks or boosters.

Fig. 4 is a side elevation of Fig. 3, the main float being cut away to show the turntable mechanism.

Fig. 5 is a cross section of Fig. 4 on the line 5—5.

Similar numerals of reference indicate similar parts throughout the several views.

The invention is constructed and operated substantially and preferably as follows: 1 is the main float or pontoon cylindrical in shape with a conical bottom 2, held by the cable 3 and anchor 4 to the bottom 6 of a sheltered bay or the like. Fore and aft of this main float extend two tracks with rails 7; a long level portion or track 9 extending to a long distance in one direction; and an inclined track 10 extending in the opposite direction to a much shorter distance. At the outer or further ends of these tracks the rails bend upward as at 11.

A cable 14 holds the end of the track 10 down below the surface of the water and runs over a pulley 15 on the anchor 4 and continues up parallel to the cable 3 to any convenient place on 1, so that the cable may be shortened or lengthened to pull down the end of 10 or allow the same to rise. A dolly or wheeled truck or cradle 12 is held at the end of the track 10 by 11 below the water line 13.

Pontoons 17 with drains 18 and air inlets 19 are either fastened fixedly to the rails 7 of the

tracks 1 and 10 as at 21 or flexibly as with shackles as at 22.

The main float has a cross track 23 at right angles to the tracks 9 and 10, and where they intersect is located a turn table 24 on wheels 25 running over a circular track 26. On track 22 are one or more power trucks or boosters 27 on wheels 28 and axles 29 driven by gearing 30 by engines 31.

At one end of the said power trucks are chains 32 or the like with hooks 33, to be used when the said trucks are used as tractors for the dollie 12; at the other end are push rods 34 when the same are used as pushers. On the dollie are eyes 36 when trailing the said trucks and bumpers when they are being pushed over the tracks ahead of the said trucks. At 38 are strengtheners or braces.

The cylindrical portion of the main float is used both as a storehouse for material, and for living quarters for the personnel. Persons enter this compartment through the hatchway as at 41 and down the ladder 42. The fuel tanks 40 have pipes 43 leading therefrom with suitable valves, to which flexible hose may extend to service the ship when the same is on the dollie and the power trucks are getting ready for action.

Two neon lights or the like are placed at each end of the main float fore and aft; and are hinged thereto so that the dollie and trucks can ride over the same when not in use.

The dollie is made wider in front than in the rear as shown at 45 so that the hull of the ship can the more easily find its way into the same; and the sides of the dollie as shown at 46 are rounded off as at 47 so that by no means can the hull strike a rough or pointed portion and be damaged. The wheels of the dollie are also covered and out of the way of doing any harm to the hull.

A wooden cat-walk or runway 48 is laid over certain pontoons at the outer end on the long track 9 between the rails.

One or more of the smaller pontoons have engines 57 and water propellers 58 mounted thereon in order to swing the tracks 9 and 10 around the central portion or main float. An extra dollie 12 is shown in Fig. 1 ready for a second ship while the first dollie is carrying the first ship down the track.

A cord 60 is attached to the smaller end of the dollie as at 36 and ties at 61 on the main float by means of which the position of the dollie on the inclined track 10 can be regulated longitudinally and therefore vertically. As shown at 50 the pontoons may be connected by chains for greater safety if desired.

The pilot of the flying boat steers his ship straight for the center of the main float (which is the nearest portion that shows above the water line) and soon feels that the bottom of the hull of his boat has settled in the soft or yielding hollow of the dollie. He keeps on moving forward under his own power running up the short inclined track 10 the said dollie gradually causing his hull to come entirely out of the water until he has passed the turn table 24, and comes to a halt a little beyond the same as at 55 which also represents the seaplane, or part of the same.

The operator of the power truck moves across the top of the main float onto the turn table, turns the latter through ninety degrees and is now facing the ship. He then drives the truck up against the dollie the two push bars shackling into the portions 36 in any well known or convenient man-

ner. The second power truck now moves into a position directly behind the first truck, the operator sitting in the seat 51 and having control of all of the motors 31 on the two trucks.

The truck operator now gives the signal and both he and the pilot on the ship start their motors getting into full throttle quickly and race down the track 9; the pilot's several motors being supplemented by an equal or even greater amount of power on the trucks. In a comparatively short time the takeoff speed of the boat is reached and the pilot gets into the air by rocking the boat on the dollie in substantially the same manner that he would rock the same were he on the water.

The boat will be equipped with a retractable resilient rear wheeled skid which when lowered by the controls will run along the planked portion 48 of the track 9 forming a runway therefor. The fuselage or rear portion of the boat will drop between the rows of engines which are placed far enough apart to allow of this.

The trucks and dollie then stop and go back to their respective places after being disengaged one from the other.

Instead of pushing the dollie with its load as 25 shown in Fig. 3, the two power trucks can pull the same as shown in Fig. 1. In this case the trucks are made ready so that as soon as the ship runs up the track 10 the two trucks are shackled to the same by the hooks 33 on chains 30 32 registering in the eye 36 on the dollie. Otherwise the preliminary run or takeoff is substantially the same as above described; although any other convenient way may be used to take off.

At night and especially in gray, dull, foggy, or 35 muggy weather the neon lights 44 are erected and lit, and the pilot steers his ship onto the dollie by these, as they cover one another when seen from the front. As soon as the ship is berthed on the dollie these lights may be extinguished and laid flat on the deck of the main float.

In very heavy weather, as during a storm, (although of course the device will be anchored in as secluded and sheltered a spot as possible) hatches may be provided large enough not only 45 to house persons, but even the trucks; and as soon as the decks are cleared the tracks are allowed to swing into the wind.

When it is desired to swing the tracks into the wind coming from a different direction, one or 50 more motor boats or the like may be employed to carry the long end of the device to the new position, but ordinarily engines 57 housed in one or more of the smaller pontoons will drive marine screws 58 and turn the tracks into the correct 55 position and keep it there if necessary.

If the pilot signals the operator on the main float that he is coming in with a heavy load, the operator allows the dollie to lie at the outer end of the track 9 as shown in Fig. 2 as the boat 60 will then be drawing more water and sink deeper therein. Of course the outer end of the track being inclined the dollie will be much below the surface of the water and the bottom of the hull of the boat also being much below the water 65 line will slide upon the dollie when in that outboard position. But if the pilot signals that he has a very light load the dollie is drawn up the incline, by the cord 60 and made fast at 61, to the proper position thereon. After the boat is 70 berthed on the dollie the trucks are fastened thereto and the cord unhooked therefrom.

As the invention is in some of its aspects generic, I do not limit myself to the particular construction shown and described, but also con- 75

template the employment of such equivalents as fairly fall within the scope of the claims.

In this connection it may be added that if the hydroaeroplane be of the double pontoon type double tracks may be laid. Passengers, mail, express and fuel may be taken on the ship either before it runs up on the track, or when it is thereon. The cable 3 and anchor 4 may be replaced by a more solid structure. The ship may take off from the track or runway in any other way than by rocking on the dolly; and the floor of the dolly may be constructed in such a manner that it pitches or is at an angle to the horizon, instead of being parallel thereto as shown; and the said floor 62 may be made hard, or soft, yielding or resilient. In case the power plant of the seaplane should give out, the cord 60 could be attached to the truck 27 and draw up the same.

Therefore it will be understood that various changes may be made in the form, proportion, size and detail of the several structures shown, the number and position of certain elements used, as well as the character of the motive power employed, without departing from the spirit of the invention.

I claim:

1. The method of taking off by a hydroaeroplane, which consists in driving the hydroaeroplane at sufficient speed on a track carried by the water, and while at such speed rocking the machine longitudinally to produce through such rocking action an aeroplane lifting effect of sufficient magnitude to lift the machine free from the track into the air, and support the entire weight of the machine therein.

2. The method of taking off by a hydroaeroplane which consists in driving the hydroaeroplane machine at sufficient speed by its own motive power supplemented by exterior auxiliary motive power on a track carried by the water, and while at such speed rocking the machine longitudinally to produce through such rocking action an aeroplane lifting effect of sufficient magnitude to lift the machine free from the track into the air, and support the entire weight of the machine therein.

3. The method of taking off a hydroaeroplane from the water to effect flight therefrom into the air, which consists in causing the hydroaeroplane machine to taxi up an incline onto a level track laid on the surface of the water, driving the machine at sufficient speed on the track, and while at such speed rocking the machine longitudinally to produce through such rocking action an aeroplane lifting effect of sufficient magnitude to lift the machine free from the track into the air, and to support the entire weight of the machine therein.

4. The method of taking off a hydroaeroplane from the water to effect flight therefrom into the air, which consists in berthing the hydroaeroplane machine on a wheeled truck located on an inclined runway, taxiing the machine up the inclined runway on the truck to a level track by the machine's own power, coupling on auxiliary power to the truck, driving the machine at sufficient speed along the track, while at such speed rocking the machine longitudinally on the truck to produce through such rocking action an aeroplane lifting effect of sufficient magnitude to lift the machine free from the truck into the air, and to support the entire weight of the machine therein.

5. In combination with a flexible floating

track, of a fixed pivot for the same, and means for turning the said track around the said pivot.

6. In combination with a takeoff device for hydroaeroplanes, of a track over which the hydroaeroplane is adapted to run under its own power for a takeoff, and a plurality of supporting pontoons for the said track.

7. In combination with a takeoff device for hydroaeroplanes, of a flexible floating track, one portion of the said track being inclined and another portion being level.

8. In combination with a takeoff device for hydroaeroplanes, of a flexible floating track, one portion thereof being inclined and below water level and a longer portion being at water level, and a wheeled truck adapted to hold the said hydroaeroplane and travel from end to end of the said track.

9. In combination with a device for launching a hydroaeroplane, of a large float, a plurality of smaller floats, a track running in one direction over all of the said floats, a cross track on the said large float, and a turn table at the intersection of the said tracks.

10. In combination with a device for launching a hydroaeroplane machine, of a plurality of pontoons spaced apart, rails laid on said pontoons, and means permitting the tail skid of the machine to run along a smooth runway.

11. In combination with a device for launching a hydroaeroplane machine, of a floating track, a truck for holding the said machine while running over the said track, and a booster truck for accelerating the speed of the said first mentioned truck.

12. In combination with a device for launching a hydroaeroplane machine having its own power plant, comprising a truck on which the hydroaeroplane rests of an auxiliary booster power plant also on a truck on substantially the same level as the said first mentioned truck so arranged that when the machine takes off by rocking, the said second mentioned truck and power plant is untouched by the machine.

13. In combination with a hydroaeroplane machine takeoff device, of a plurality of pontoons, a track laid thereon sloping into and below the water line, a dolly having a body for berthing the machine, and means for regulating the height of the dolly below the water line.

14. In combination with a signal light, a runway, a truck, and a hinge for the said light to retract the same out of the way of the said truck.

15. In combination with a flexible floating track, of a fixed pivot for the same, and means permitting the turning of the said track around the said pivot.

16. In combination with a device for launching seaplanes, of a track upheld by pontoons forming a flexible runway on the surface of the water for seaplanes to launch themselves under their own power.

17. In combination with a device for launching seaplanes, of a plurality of pontoons spaced apart, rails laid on the said pontoons, and a smooth runway laid parallel to the said rails on which the rear portion of the seaplane may run.

18. In combination with a device for launching seaplanes, of a track laid on the surface of the water, part of the same being horizontal and part inclined and dipping into the water, and a dolly normally lying below the water line on the said inclined portion and adapted to berth a seaplane and carry the same from below the waterline to the said horizontal portion of the said track,

along the same, and finally permitting the machine to lift itself therefrom.

19. In combination with a device for launching seaplanes, of a dollie adapted to carry the seaplane from a floating position on the water to a takeoff position into the air, and a booster truck for accelerating the speed of the said dollie and mounted in substantially the same plane as the same.

20. A method of launching a seaplane normally at rest on the water, consisting in running the machine up to and onto a dollie below waterline, climbing the plane by its own power up an incline, and then running along a horizontal track above waterline till sufficient speed is obtained to lift the plane off the dollie into the air.

21. A method of launching a seaplane resting normally on the water, consisting in making a landplane of the machine for the time being, and obtaining sufficient lift therefor by a run over the water to take off into the air as would a landplane.

22. In combination with a seaplane, of means for launching the same from rest on the surface of the water to flight in the air, said means comprising a track laid along the surface of the water.

23. In combination with a seaplane, of means for launching the same from substantially at rest

on the surface of the water to flight into the air, the said means comprising a dollie running over a flexible track laid along the surface of the water, and a booster on substantially the same level with the said dollie to accelerate the speed of the plane while travelling over the said track.

24. In combination with a device for launching seaplanes, of a track upheld by pontoons forming a flexible runway on the surface of the water for seaplanes to launch themselves under their own power, and means mounted on the pontoons for changing the location of the device.

25. In combination with a device for launching seaplanes, of a track upheld by pontoons forming a flexible runway on the surface of the water for seaplanes to launch themselves under their own power, and a motor and propeller on the said pontoons for changing the location of the device.

26. In combination with a seaplane, an incline reaching below sea level and extending above the same up which the seaplane travels, a track on the incline, a dollie, a booster truck, a platform extending beyond the incline and attached thereto and also provided with a track, and a turntable having a track thereon mounted on the platform in line with the incline over which the truck and the dollie run.

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