Jan. 6, 1948. L. J. MAXSON 2,433,858

AIRPLANE HANDLING DEVICE

Filed May 18, 1932 3 Sheets-Sheet 1

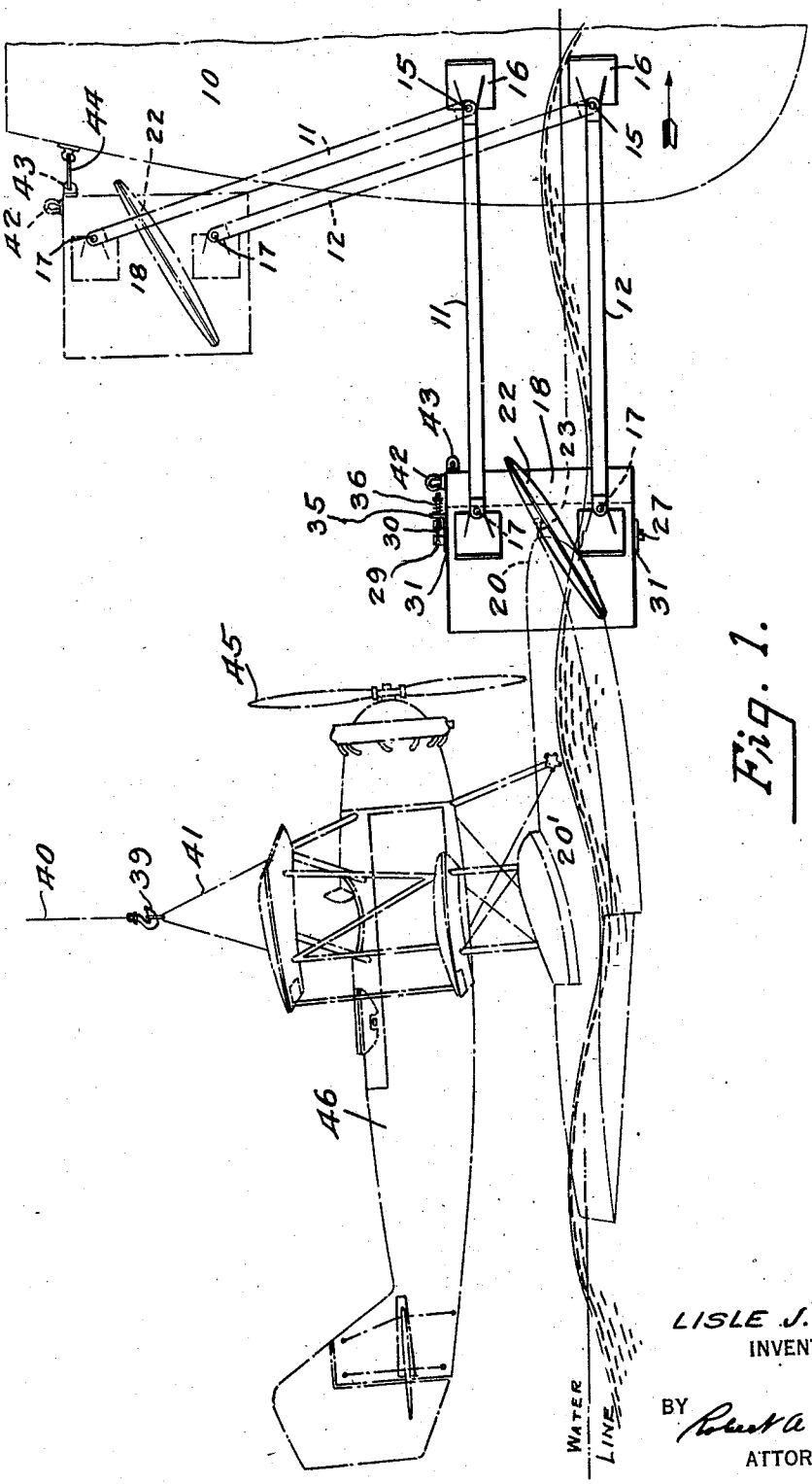



Fig. 1.

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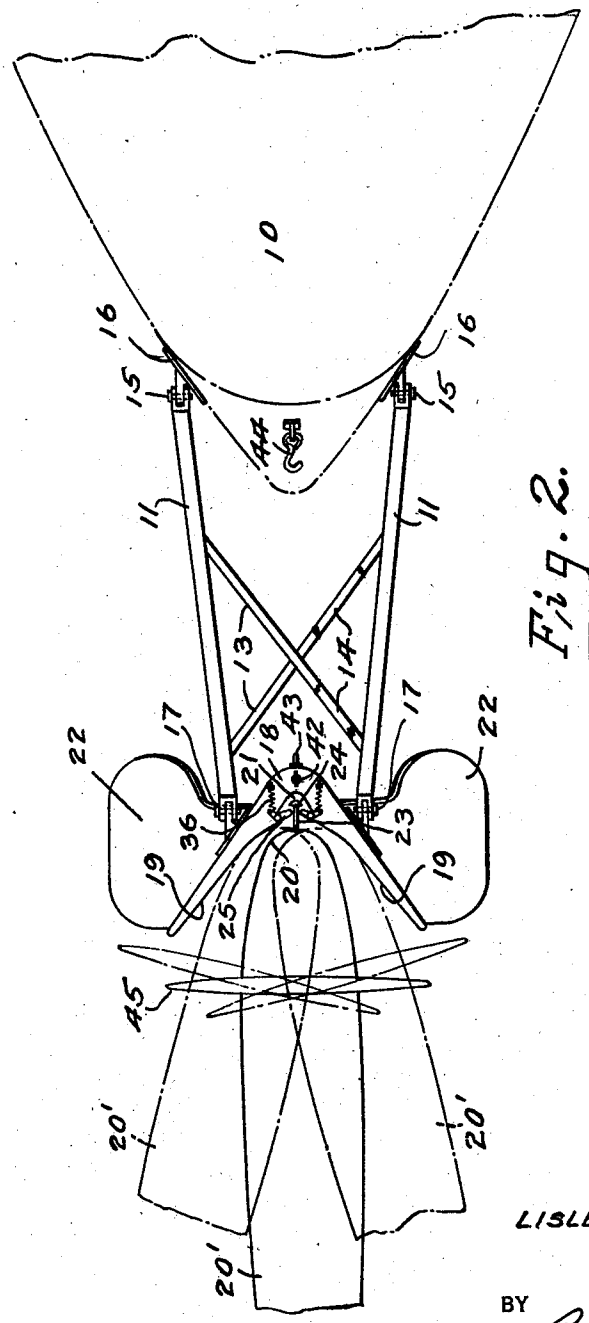



Fig. 2.

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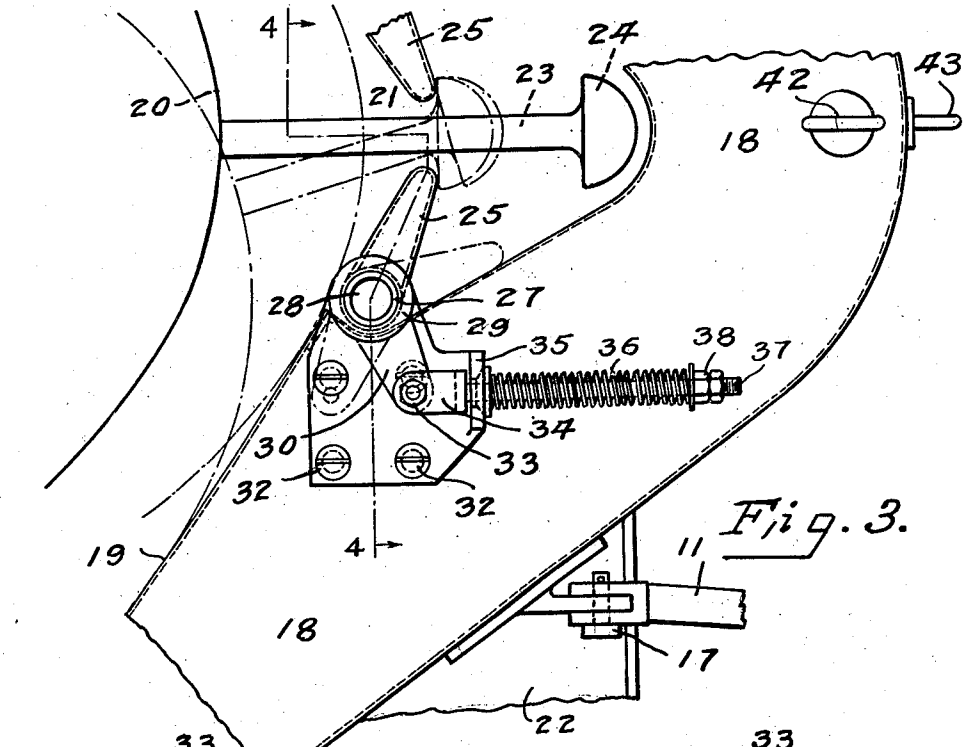



Fig. 3.

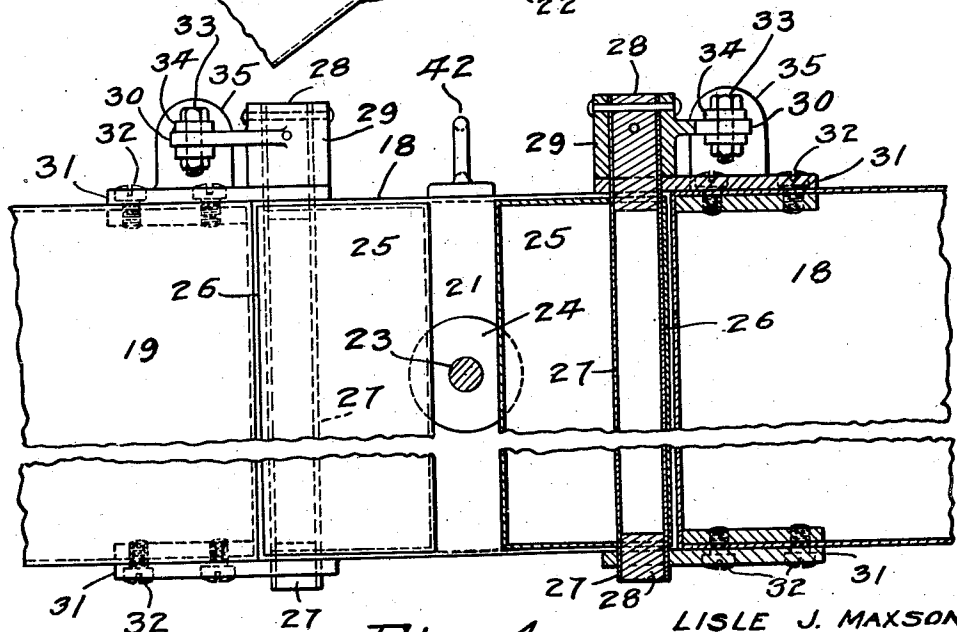



Fig. 4.

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Patented Jan. 6, 1948 2,433,858

# UNITED STATES PATENT OFFICE

2,433,858

## AIRPLANE HANDLING DEVICE

Lisle J. Maxson, United States Navy

Application May 18, 1932, Serial No. 612,128

6 Claims. (Cl. 114—43.5)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

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My invention relates to airplane handling devices and more particularly to an airplane pick-up or mooring gear for use on vessels and landing docks.

The principal object of my invention is to provide an airplane pick-up or mooring device that can be easily and quickly brought into action, or stowed, where it is desired to hoist a seaplane or flying boat from the surface of the water.

A further object of my invention is to provide a device adapted to the quick and efficient handling and stowage of seaplanes or flying boats that will enable the pilot of an aircraft to taxi into and engage a quick coupling attachment supported by a vessel either while it be under way or floating in either a rough or calm sea.

Another object of my invention is to provide a device which will enable the pilot of a seaplane to taxi into and automatically moor his plane preparatory to coupling to a hoisting crane for being hoisted upon a dock or aboard a vessel or other float.

A further object of my invention is to provide a mooring device for airplanes having water landing gear in which the coupling gear after contact has been made will permit the mooring device to be unlatched to release the coupling gear when it is desired that the airplane be released while still afloat or permit the airplane to be hoisted and thereby free the coupling gear.

A further object of my invention is to provide a device which will permit the hoisting of the gear clear of the water when not in use.

Another object of my invention is to provide a device which will permit easy and safe mooring of a seaplane or flying boat to a vessel under way, while making a transfer of passengers, cargo or for refueling, etc.

It is also an object of my invention to provide a device that is rugged, of light weight, and one that can be easily and quickly raised or lowered from the stern of a transport or other floating vessel.

With the above and other objects in view the invention consists in the construction, combination and arrangement of parts, as will be described more fully hereinafter.

Reference is to be had to the accompanying drawings forming a part of the specification, in which like reference characters indicate corresponding parts throughout the several views and in which:

Figure 1 is a view in side elevation, showing my improved device for the mooring of seaplanes, and its position relative to the stern of a vessel or other docking means.

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Figure 2 is a detail plan view.

Figure 3 is an enlarged detail fragmentary plan view of the mooring coupling.

Figure 4 is a fragmentary end view with parts of the mooring coupling shown in section.

Referring more particularly to the drawings 10 indicates a portion of the stern of a vessel shown more or less diagrammatically, to which is attached upper and lower frame members 11 and 12, each being braced by diagonal stiffeners 13 and 14, and hinged at 15 to brackets 16 located on the sides of the stern 10. The outer ends of the frame members 11 and 12 are hinged at 17 to a V-shaped float 18 having tapered or converging inner side walls 19, which remain substantially vertical whether functioning upon the water or in stowed position (see dotted lines, Figure 1), because the members 11 and 12 are parallel and of equal length.

The object of the V-shaped inner walls 19 of the float 18 being to provide a guide to direct the bow 20 of the float pontoon or hull 20' of an approaching airplane taxiing in to make contact with the coupling member 21.

The float 18 is preferably constructed of sheet metal and is made watertight and provided with suitable bulkheads and stiffener members (not shown) and is equipped with small hydrovane blades 22 extending out at either side and set at a positive angle of incidence so as to prevent it from submerging when coming in contact with the waves when the vessel is under way.

The mooring member attached at the bow 20 of the float pontoon or hull 20' consists of a shank 23 having a head 24 adapted to be engaged by the gate-like jaws 25 of the coupling member 21.

The jaws 25 extend approximately the full height of the float 18, and are also made of sheet metal and watertight in order to have them as light in weight as possible. These jaws 25 may be formed by welding the back ends 26 around a spindle 27 which might also be made of pipe having very thin walls and being plugged at the ends as at 28 so as to provide additional buoyancy and allowed to extend above and below the maximum height of the float 18. Fittings 29 are provided at the upper ends having lever arms 30, and bearing plates 31 which engage the spindle above and below the top and bottom plates secured by screws 32 to the float 18. The lever arms 29 are connected by the bolts 33 at their outer ends to the clips 34 which engage the stop members 35 of the bearing plate 31 and limit the outward movement of the jaws 25, while inward movement of the jaws 25 are cushioned against the compression springs 36 supported by rods 37 of the

clips 34. Adjustment is provided for the control of the tension exerted on the springs 36 by the lock nuts 38 engaging the threaded ends of the rods 37.

After a plane has taxied into the coupling 21 it can either be towed or moored in that position, or it can be attached to the swinging hook 39 suspended from the hoisting cable 40 of a crane (not shown) aboard the ship by engagement with the sling 41 attached to the airplane After the airplane is attached and is being hoisted the head 24 of the shank 23 passes up through the space back of the jaws 25 leaving the float 18 free and in readiness for entrance of another airplane, or if it is desired the hook 39 of the hoisting cable 40 may be attached to the ring 42 connected to the structure of the float 18 and the same raised to the broken line position shown in Figure 1 where an eye 43 secured to the float is engaged by a hook 44 supported by the vessel which will hold the float 18 in stowed position.

Provision is made by the clearance allowed between the width of the pontoon and the vertical inner walls 19 of the float 18, so that the propeller 45 of the plane 46 will not come in contact, as shown more clearly in Figure 2.

It will be understood that the above description and accompanying drawings comprehend only the general and preferred embodiment of my invention, and that various changes in the construction, proportion and arrangement of parts may be within the scope of the appended claims, and without sacrificing any of the advantages of my invention.

The herein described invention may be manufactured and used by or for the Government of the United States for governmental purposes without the payment to me of any royalties thereon.

What I claim is:

1. The combination with a vessel or dock, of a seaplane or boat mooring bumper, means connecting the bumper to the vessel or dock for vertical swinging movement of the bumper, said means holding the bumper upright when the bumper is disposed in any one of a plurality of vertically spaced positions so that the bumper may cooperate with seaplanes or boats having bumper members at different levels, guide means for said bumper members on said bumper, means at the inner end of said guide means for automatically coupling the seaplane or boat to the bumper upon engagement therewith, and means for elevating and lowering the bumper into any one of said positions.

2. The combination with a vessel or dock, of a seaplane or boat mooring bumper float, rigid parallel links connecting the bumper float to the vessel or dock for vertical movement of the bumper float between positions of operation and storage, said links being of substantially equal length and vertically displaced relative to each other whereby the bumper float, when disposed at the water level is held upright regardless of vertical shifting of the water line relative to the vessel or dock, and hydrovanes on said float for maintaining said float at the surface by the flow of water thereunder.

3. The combination with a vessel or dock, of a seaplane or boat mooring bumper float, rigid parallel links connecting the bumper float to the vessel for vertical movement of the bumper float, said links being of substantially equal length and vertically displaced relative to each other whereby the bumper float is held upright in any one



of a plurality of vertically spaced positions so that the bumper float may cooperate with seaplanes or boats of varying characteristics, means for elevating and lowering the bumper float into any one of said positions, and hydrovanes on said float for maintaining said float at the surface by the flow of water thereunder.

4. In a device for coupling a seaplane or boat to a vessel or dock, said seaplane or boat having a prow provided with a forwardly extending pin terminating in a head, a bumper provided with means including horizontally spaced parallel gate-like jaws operating on vertical pivots for receiving and automatically holding said pin, said bumper including convergent walls for guiding the head of said pin through said jaws and for engagement with the sides of the seaplane or boat prow to prevent excessive fish-tailing of the seaplane or boat in the water when the pin is held between said jaws, and means connecting the bumper to the vessel or dock whereby said convergent walls are held upright.

5. In a device for coupling a seaplane or boat to a vessel or dock, said seaplane or boat having a prow provided with a forwardly extending pin terminating in a head, a vertically swingable bumper on said vessel or dock shaped to provide a vertically elongate trough, said trough being provided with convergent vertical walls for guiding the pin into the bottom of the trough, means including horizontally spaced vertical gate-like jaws having spaced vertical edges extending along the bottom of the trough for automatically slipping over the head of the pin and thereby holding the pin against retraction from the open side of the trough, said pin being movable vertically between said edges, and means connecting the bumper to the vessel or dock whereby said convergent walls are held upright while being swung vertically.

6. The combination with a vessel, of a seaplane or boat mooring bumper provided with a hydrovane for supporting the bumper on the water, rigid vertically spaced parallel links connecting the bumper to the vessel for vertically swinging movement of the bumper, said links being of approximately equal length whereby the bumper, when disposed at the water level is held upright and the hydrovane remains at a given angle of incidence regardless of shifting of the water line relative to the vessel.

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