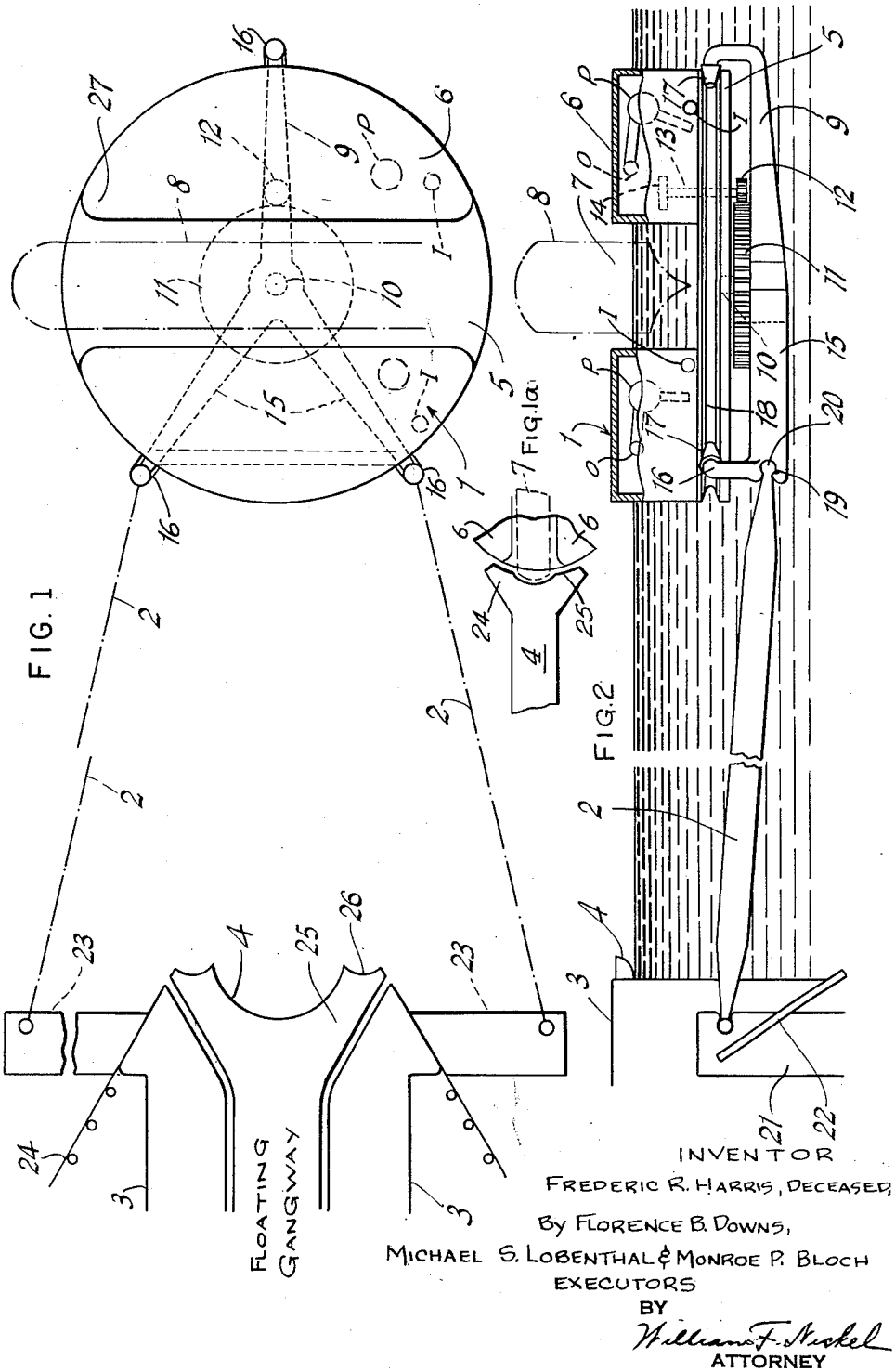
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WATER-BORNE AIRPLANE TERMINAL

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WATER-BORNE AIRPLANE TERMINAL

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4 Claims. (Cl. 114—43.5)

This invention relates to improvements in maritime terminals for aircraft, especially sea planes or "flying boats," which can light on water at harbors and other points to take on or discharge freight or passengers.

It is an important object of this invention to provide a floating terminal comprising a platform which can be placed in desired position on a body of water at a convenient distance from the shore; and which has the design, size and capacity to facilitate loading and unloading, or overhauling and repairing a plane when the latter is berthed therein; and a removable bridge or gangway, which will usually be in retracted position adjacent a nearby stationary wharf or pier on the shore, and which can easily be moved across the space between the platform and the shore, so that the plane and its contents can be conveniently handled.

A further object of the invention is to provide a structure for a sea plane terminal that is built to have elevated side structures and a space between them for the body or hull of the plane; the height of such structures preferably making the tops level with the doors or hatchways of the plane or flying boat.

Another object of the invention is to provide a sea plane terminal which, while it is maintained in the required location or position, can be readily shifted so that the plane can easily pass into its berth upon same from virtually any direction of approach, and then be operated further to enable the gangway to connect with the platform to the best advantage.

An additional object of this invention is to provide a sea plane terminal having the general construction of a floating dry dock to be partly submerged when necessary, and raised again in the same manner as in the lifting and repairing of ships and adapted to give the plane and all its parts suitable support therein, and afford ample space for passengers, cargo and repair equipment, materials and supplies, while the plane is loading or discharging.

The design of the invention clearly described herein and the accompanying drawings disclose a preferred embodiment of the terminal. But, the invention is not to be limited in practice to the features actually shown and many variations in details may be made without departing from the general plan containing the invention.

On said drawings:

Figure 1 shows a top plan, somewhat diagrammatic, of a complete sea plane terminal according to this invention;

Figure 1*a* shows portions of the terminal in line with means connecting it with a shore installation;

Figure 2 is a side view of the terminal, with some parts shown on an enlarged scale.

The same numerals identify the same parts throughout.

This application is a division of application Serial No. 610,749, filed August 14, 1945, and now abandoned.

In Figures 1 and 2, the terminal is indicated as a whole by the numeral 1, and embraces a pair of beams 2 (shown diagrammatically only in Figure 1) by which it is secured

in the desired position offshore. These beams or mooring means have ball and socket or other pivotal connection with the terminal at one end and with a fixed abutment adjacent the shore at the other end; so that the said terminal may rise and fall with the tide or according to the weight or load carried by same. The beams or members 2 extend a selected distance from a pair of abutments, such as wharves or piers 3 on or adjacent the shore, and between the piers 3 is a long buoyant floating member 4, which is usually in retracted position between the piers 3 and can be moved out to serve as a bridge or gangway, preferably floating on the water, to connect the terminal to the shore.

The terminal 1 has a bottom indicated at 5 and preferably in the form of a circular platform or turntable with a structure 6 of some height at each side. The tops of these elevated sides or parts 6 may be used as supporting surfaces for receiving and discharging passengers and freight thereon; and they are separated by a space 7 which forms a slipway or berth for the body 8 of the sea plane. When the latter comes to rest on the surface of the water it is moved into the space 7 between the sides 6 for loading or unloading. The platform 5 is a spanning or supporting connector member which unites the parts 6 at their lower ends. The structures 6 are like the side walls or wings of a floating dry dock, and may be hollow, as illustrated in part on Figure 2. The elevated structures or side walls 6 can be weighted by pumping in water when necessary to submerge the framework 9 and platform 5; but are always kept buoyant enough to support their tops above the water surface. The wings of the plane in the berth 7 project out over the walls 6.

Below the turntable 5 the terminal 1 also includes a framework 9, at the middle of which is a journal or pivot 10 on which the platform 5 and sides 6 can be revolved as a unit. This framework supports a stationary gear 11 surrounding the journal 10, and this gear meshes with a pinion 12 on a shaft 13 projecting from one of the structures 6. The shaft 13 can conveniently be turned by a motor or winch indicated at 14. Several gears and motors may be employed. Each of the arms or branches 15 of the frame member 9 has hook-shaped ends 16 carrying cone-shaped, anti-friction rollers 17 which move in a groove or raceway 18 in the outer peripheral surface of the member 5. Two of the arms of the framework 9 have sockets 19 to receive the spherical ends 20 of the beams 2 and thus provide the ball and socket connection above mentioned. A similar ball and socket joint unites the beams 2 with the tops of piles 21, a number of which are employed in the building of the piers 3. These piles 21 are braced where necessary by diagonal piling 22 and carry horizontal beams at the tops indicated at 23, constituting the abutments to which beams 2 are thus joined. The adjacent ends of the beams 2 may be connected by the ball and socket joints to either the beams 23 or piles 21 as will be understood. At the ends of each pier 3 is a line of stakes or piles 24 in a diagonal position which may be united by planking or any other form of covering, if desired. The ball and socket joints at the ends of the beams 2 also permit the platform 5 in some degree to swing sidewise when swayed by wind or wave action. The frame 9 is thus a cooperating base member rotatably engaging the platform 5.

The rack 11 is of course fixed to the framework 9 and the stud or journal 10 is either fixed to the platform 5 and rotatably mounted in a bearing on the framework 9, or fixed to said framework and rotatably engaged with a bearing in the platform 5.

In practice, when a sea plane lands near a terminal, the turntable 5 is revolved to move the slipway 7 into line with the direction of approach of the plane; which then taxies into position, bringing its hull or body into the

berth between the sides 6, with the hull 8 projecting somewhat beyond the platform 5, as indicated in Figure 1. The platform is then revolved to bring the slipway 7 into line with the bridge or gangway 4 (see Figure 1*a*), which is then moved outward, floating on the water, until it reaches the platform 5. Preferably, the outer extremity of the bridge 4 is forked somewhat, having arms 25 with concave curved surfaces 26 at their outer ends to fit against the narrow curved ends 27 of the two sections 6, and receive the body 8 of the sea plane between them. The plane can then be loaded or unloaded, and the passengers and other contents can be moved from the piers 3 over the gangway 4 to the sides 6 to load the plane, or in the opposite direction to unload it.

The buoyant side structures 6 are connected by the part 5; and these connected side structures 6 are pivotally mounted with respect to the supporting member shown at 9. This supporting member 5 may be considered as including the mooring beams which are pivotally united to the fixed piles or supports 21 at the shore so as to hold the side structures in position. The mooring beams 2 move up and down at their outer ends as the platform 5 rises or falls with the tide; but very little sidewise or rotary movement is allowed, except as the platform oscillates slightly on the journal 10 in response to wind or wave action.

From the foregoing description it will be apparent this sea plane terminal is well adapted to serve the required purpose and can be readily set up at any place where it may be needed.

In Figures 1 and 2, the structures 6 have cylindrical or otherwise curved outboard faces, while the inboard faces are parallel and flat with the space 7 for the aircraft between them. The piers or wharves 3 will of course have planks suitably arranged thereon to form a landing stage. The shafts 13 and operating means can be housed in one or both structures 6. These structures can be weighted by pumping water into them but are always kept buoyant enough for their tops to be above the water. Pumps are diagrammatically indicated at P with inlets I and discharge openings O, having valves where needed.

The invention having been described, what is claimed as new is:

1. A marine terminal for seaplanes to be located offshore in a body of water, said terminal comprising a base member, a platform rotatably mounted on said member, hollow walls having buoyancy on said platform, the buoyancy of said terminal being sufficient to support the platform and base member submerged in said water below the surface thereof, with the tops of said walls above said surface, said walls being separated by a space between them containing water to float the hull of a seaplane therein, means for connecting said base member to a structure adjacent the shore to prevent rotation of said base, the platform having an endless groove in its rim extending fully around it, rollers mounted on said base member operatively engaging said groove, and interengaging gear means carried by said platform and by said member to rotate the platform on said base member.

2. A marine terminal for seaplanes to be located offshore in a body of water, said terminal comprising a base member, a platform rotatably mounted on said member, hollow walls having buoyancy on said platform, the buoyancy of said terminal being sufficient to support the platform and base member submerged in said water below the surface thereof, with the tops of said walls above said surface, said walls being separated by a space between them containing water to float the hull of a seaplane therein, means for connecting said base member to a structure adjacent the shore to prevent rotation of said base, the platform having an endless groove in its rim extending fully around it, rollers mounted on said base member operatively engaging said groove, and interengaging gear means carried by said platform and by said member to rotate the platform on said base member, said base member having branching arms with ends bent towards said groove carrying said rollers.

3. A marine terminal for seaplanes, said terminal to be located offshore in a body of water, and comprising a base, a platform rotatably mounted on said base, hollow buoyant walls on said base, the buoyancy of said terminal being sufficient to support said base and platform under the surface of said water with the tops of said walls above said surface, said walls being separated by a space containing water to float the hull of a seaplane, interengaging gear means on said base and member, a pair of elongated separated arms movably connected at one end to said base, said arms also being movably connected each to a fixed abutment at the other end, said arms permitting up-and-down movement of said base and platform while preventing rotation of said base, said abutments being separated from each other and separated by a space from said platform, a floating gangplank movable between said abutments and said arms to bridge said last-named space, and means to operate the gearing to rotate the platform to aline the space between said walls first with an incoming plane and then with said gangplank.

4. A marine terminal for seaplanes, said terminal to be located offshore in a body of water, and comprising a base, a platform rotatably mounted on said base, hollow buoyant walls on said base, the buoyancy of said terminal being sufficient to support said base and platform under the surface of said water with the tops of said walls above said surface, said walls being separated by a space containing water to float the hull of a seaplane, interengaging gear means on said base and member, a pair of elongated separated arms movably connected at one end to said base, said arms also being movably connected each to a fixed abutment at the other end, said arms permitting up-and-down movement of said base and platform while preventing rotation of said base, said abutments being separated from each other and separated by a space from said platform, a floating gangplank movable between said abutments and said arms to bridge said last-named space, and means to operate the gearing to rotate the platform to aline the space between said walls first with an incoming plane and then with said gangplank, said platform being circular and having an endless groove extending fully around it, the base having branched arms with ends bent towards said groove and carrying rollers operatively engaging said groove.

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