April 5, 1949. L. G. HECKER 2,466,236

AMPHIBIOUS VEHICLE

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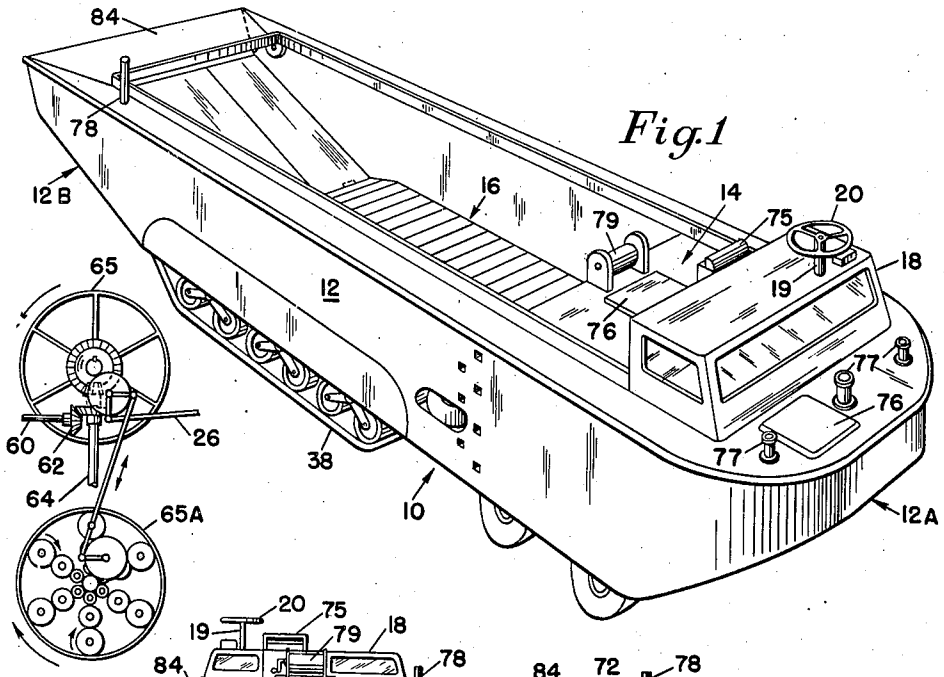


Fig. 1

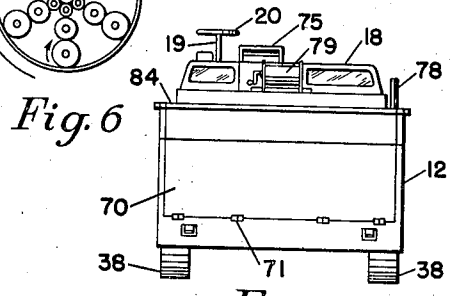


Fig. 6

Fig. 4

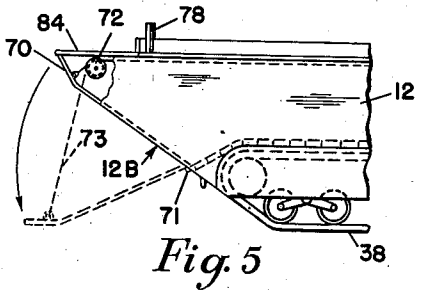


Fig. 5

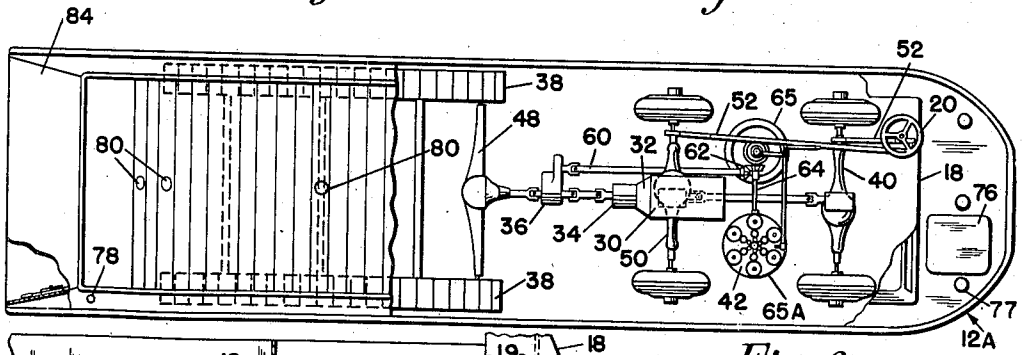


Fig. 2.

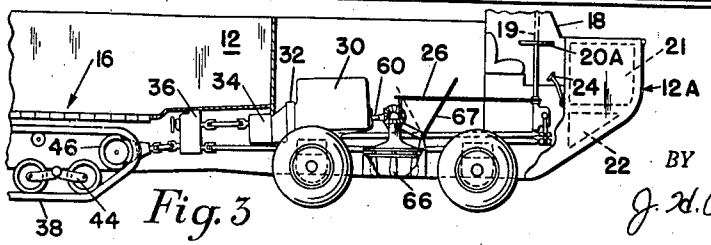


Fig. 3

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AMPHIBIOUS VEHICLE

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4 Claims. (Cl. 115—1)

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This invention relates to amphibious vehicles and more particularly to relatively large cargo carrying vehicles which can be used on water and land.

During the present war, two new vehicles, the LST (landing ship tank) and the Duck (2½ ton 6x6 truck, amphibious) have proved beyond any doubt, the need of shallow draft, highly maneuverable boats for use in military-naval operations. In the direct ship-shore handling of personnel and small cargoes, the Duck is particularly satisfactory in that it can deliver the goods where they are needed. The LST serves a different purpose in that it delivers larger cargoes (tanks for example), but in general, this vehicle is only a boat and while it carries its own gangplank and will make a good beach approach, it is not amphibious.

In accordance with my invention, I combine the amphibious qualities of the Duck with the desirable capacity and landing characteristics of the LST and create a new vehicle which I term the Pelican.

The main feature of my vehicle is that it is fully amphibious and has adequate propelling means for the water as well as for the land. However, I also provide it with track-laying elements which are particularly desirable for beach landing. The vehicle is adapted to carry a substantial cargo, in the order of thirty or forty tons, and can easily carry a tank of the medium class. This can not only be carried from a mother ship to the shore but can even be delivered sufficiently inland to avoid miring down on the beach.

It will be apparent that there are many objects and advantages to my invention as will be described hereinafter in connection with the attached drawings, illustrative thereof, and in which:

Fig. 1 is a perspective view of the vehicle;

Fig. 2 is a top plan view with parts broken away to show the internal mechanism;

Fig. 3 is a side elevation, with parts broken away to show certain detail features;

Fig. 4 is a rear elevation;

Fig. 5 is a side elevation of the rear showing the details of the ramp, and

Fig. 6 is a plan of the propeller drive mechanism.

In accordance with a preferred form of embodiment of my invention, I show in Fig. 1 an amphibious vehicle generally indicated at 10, such vehicle (or vessel) having a hull 12, the forward part 12*a* of which is stern shaped and the rear part 12*b* of which is bow shaped. As will hereinafter be described, the vehicle will proceed in

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either a forward or rearward direction and bow and stern may be interchangeable depending on the direction of movement. As a vessel, I consider the part 12*b* to be a bow while as a vehicle I consider the part 12*a* to be front.

The hull 12 consists generally of the forward-crew-power compartment 14 and the rear or bow cargo space 16. In the former, I provide an enclosed deck house 18 from the top of which projects steering post 19 on which is mounted a steering wheel 20. This post 19 may also be operated from inside the deck house by a second wheel 20*a* as shown in Fig. 3. The forward compartment is also provided with storage space 21, fuel tanks 22, operating controls 24, driver's seat 26, and sufficient additional equipment common to vehicles to provide an operative structure but which are omitted in the interest of clarity and simplicity.

The forward-crew-power compartment 14 also carries the motive power for the vehicle and as one suitable mechanism, I have shown an internal combustion engine 30 with its appropriate clutch 32 and transmission 34. This is also shown schematically for it is not only possible to substitute other forms of motive power but it is considered unnecessary to show all of the usual accessories to a common engine of this type.

In general, the drive of the power plant is to a transfer case 36 and thence as desired, to either the ground propelling mechanism including the track 38 and the bogie axle construction 40, or to the propeller mechanism 42. The track 38 is supported by a suitable bogie suspension mechanism 44 and is driven by a sprocket 46 from the differential or other drive 48. The bogie axle construction 40 includes front and rear wheels mounted on differential drive members 50 and suitable suspension mechanism will be used, not shown. These wheels are dirigible from the foot of the steering post 19 through links 52.

The propeller mechanism is more particularly shown in outline in Fig. 3 and in somewhat greater detail in Fig. 6. A suitable power take-off 60 from the transfer case 36 leads to the bevel gear 62 which in turn drives the shaft 64. This drives the housings 65 and 65*a* which appropriately rotates the cycloidal blades 66. These may be raised or lowered by the lever 67.

The bow 12*b* of the vessel is preferably of the ramp type in which the ramp 70 is suitably hinged at 71, and being provided with a winch 72 and cable 73, it can be raised and lowered as desired. Suitable means, not shown, will act as dogs to make the ramp secure and suitable packing will

be used to make the compartment water-tight.

The hull may also be provided with suitable engine ventilators as at 75, hatches 76 and anchoring bits 77. The engine exhaust may project about the hull at 78 and a winch 79 may be used when desired.

It is contemplated that the hull will be suitably braced and balanced to make a thoroughly seagoing vessel, with the added characteristic that the tracks 38 will permit the vehicle to move over low water places (insufficient to float the vessel) and to climb out of the water as desired. The vessel is usually open and may have drains 80 to draw off water which may have become collected. Suitable tarpaulins may be used, of course, in bad weather.

If desired, a control 82 may be provided between the steering posts 19 and water propulsion mechanism 42 so that a control may be effected on the respected cycloidal blade units to aid in the steering of the vehicle.

The hull of the vehicle may also have a removable deck portion 84 suitably held in position while the vehicle is in transport operation to prevent the overflow of waves into the cargo space. This removable deck portion can be immediately taken out on reaching shore so that the ramp 70 may be lowered into position.

While I have shown and described a preferred form of embodiment of my invention, I am aware that modifications may be made thereto and I therefore desire a broad interpretation of my invention within the scope and spirit of the description herein and of the claims appended hereinafter.

What I claim is:

1. An amphibious dirigible tracklaying vehicle of the character described comprising a hull having a large cargo space adapted to receive a heavy combat vehicle, a hinged ramp forming a part of said hull, an engine supported within said hull, propulsion members supported from the lower portion of said hull and arranged to be driven by said engine, said propulsion members including a pair of ground engaging tracks, a pair of ground engaging dirigible drive wheels, and a water propeller, drive control means associated with said engine and propulsion members, and manually operable means acting on said dirigible drive wheels for steering the vehicle.

2. An amphibious dirigible tracklaying vehicle of the character described comprising a hull providing a large cargo space adapted to receive a combat vehicle, a hinged ramp forming a part of said hull, an engine supported within said hull, a pair of ground engaging tracks and dirigible drive wheels supported adjacent the sides and from the lower portion of said hull, bladed water propulsion means supported from the lower portion of said hull, manual control means for drivingly connecting said engine to said tracks, to said dirigible drive wheels and to said water propulsion means, and a manually operable steering control associated with said dirigible drive wheels and said water propulsion means for steering the vehicle.

3. The amphibious dirigible tracklaying vehicle as set forth in claim 2, wherein said bladed water propulsion means includes a pair of spaced housings connected to rotatable cycloidal blades.

4. In a large amphibious dirigible tracklaying vehicle of the character described, the combination of a hull formed in part by a hinged ramp, a source of motive power in said hull, a pair of ground engaging tracks suspended from the lower portion of said hull, a pair of ground engaging dirigible drive wheels suspended from the lower portion of said hull, a water propeller extending from said hull, and controllable means for drive connecting said source of motive power to said tracks, to said drive wheels, and to said propeller.

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