May 5, 1936. J. ENGLIS 2,039,399

VESSEL

Filed Feb. 19, 1932 2 Sheets-Sheet 1

Fig. 1.

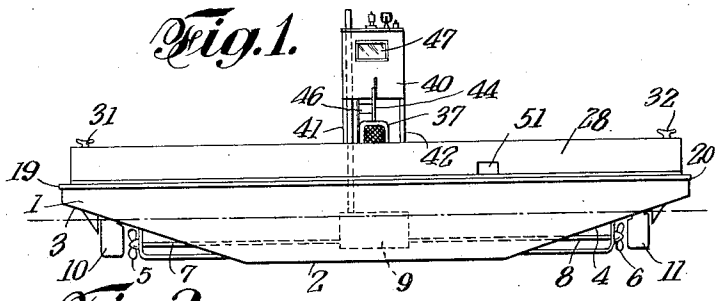


Fig. 3.

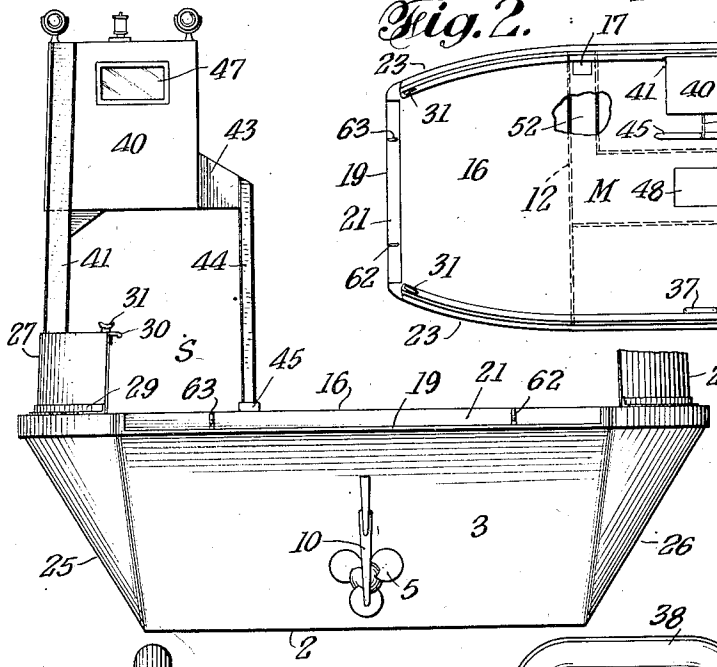


Fig. 2.

Fig. 5.

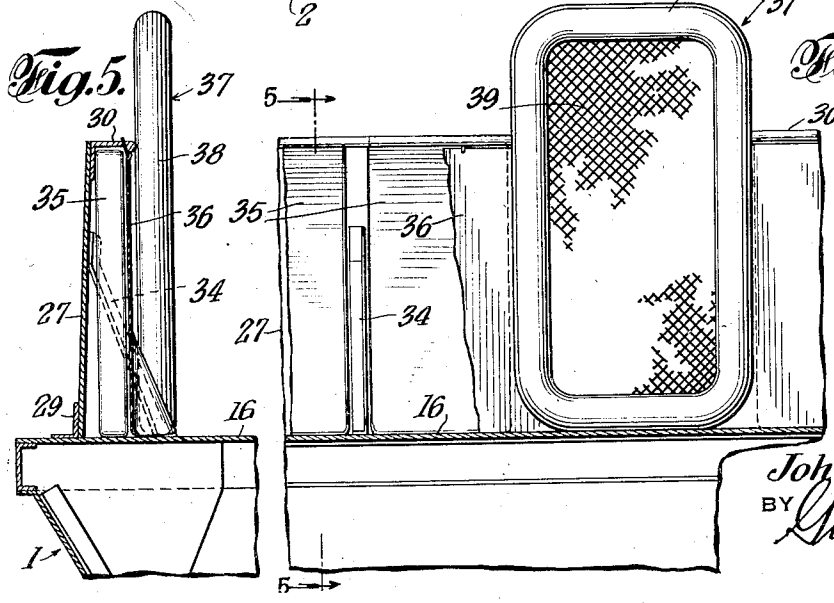


Fig. 4.

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Fig. 6.

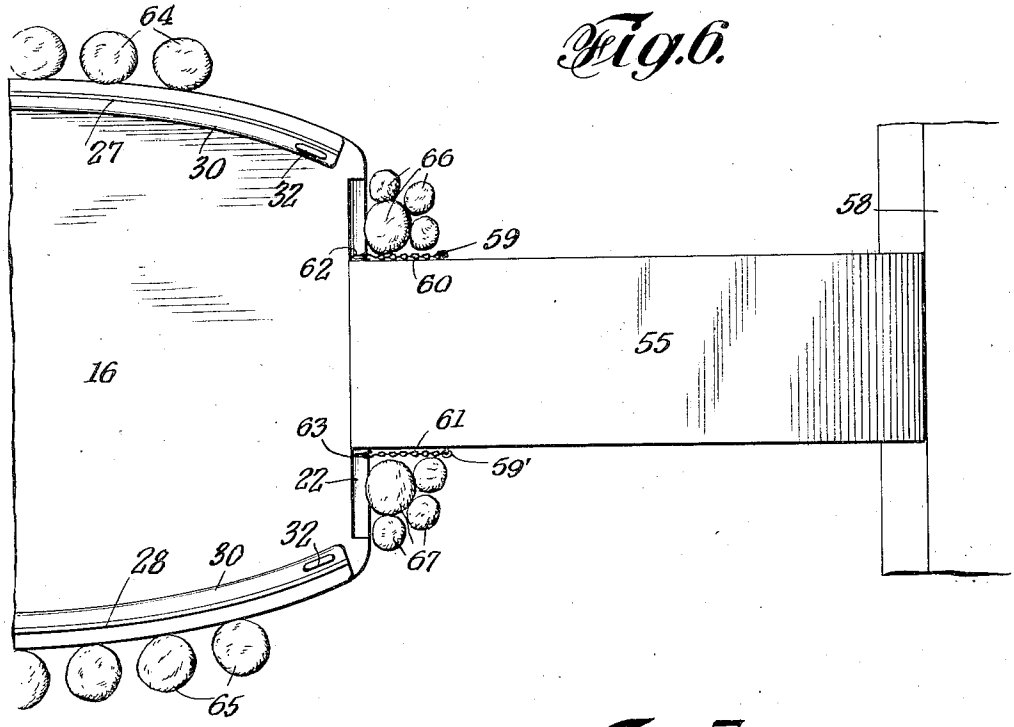


Fig. 7.

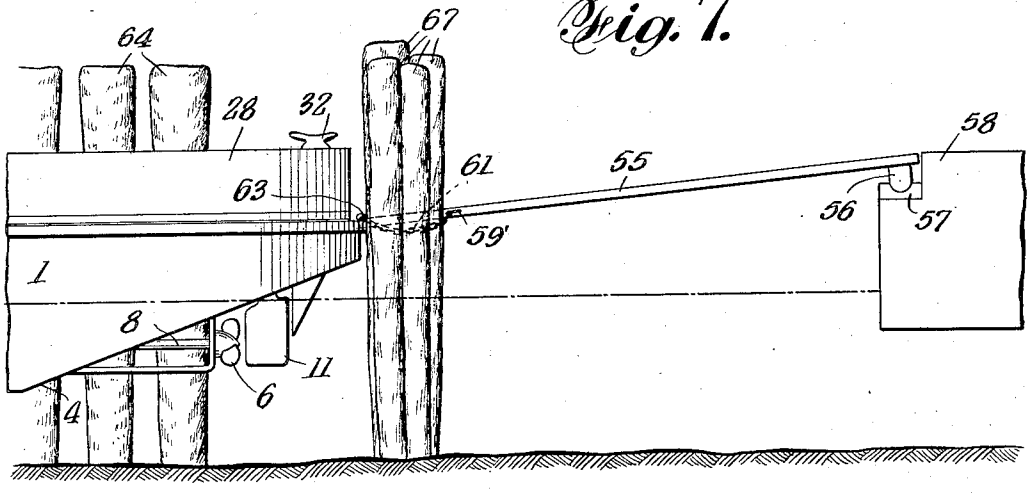
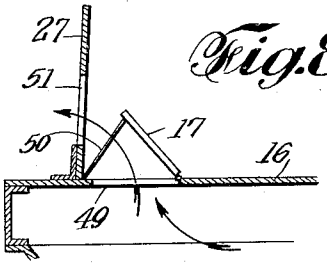


Fig. 8.



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UNITED STATES PATENT OFFICE

2,039,399

VESSEL

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Application February 19, 1932, Serial No. 593,976

16 Claims. (Cl. 114—70)

This invention relates to boats in general and especially to vessels of the type extensively used for hauling automobiles and the like a comparatively short distance across water streams, such as rivers and the like.

With vessels of this type, the size of crew required to man the same depends upon the dimensions of the vessel. As an instance, a motor driven vessel sixty-five feet long and over requires a crew of four men or more, whereas with a motor driven vessel less than sixty-five feet in length, a crew of two men is sufficient.

A motor driven vessel used in short hauls for the carrying of automobiles can function very efficiently with a crew of two men irrespective of the number of cars accommodated.

One of the objects of the present invention is to provide a motor driven vessel of the maximum size permitted by law to be manned with a crew of two men and in which the space available for accommodating the greatest number of cars can be used to the best advantage. To this end, the present invention aims to provide an improved structure for a motor driven automobile carrying vessel where a maximum of the deck area can be used for accommodating automobiles and the like.

Among the objects of the present invention, it is aimed to provide an improved bridging device consisting of a bridge in cooperation with a shore connection and the boat which will materially reduce the amount of space heretofore necessary for accommodating such bridges and thereby to increase the available deck area for the use of the cargo, automobiles and the like.

Specifically the present invention has for an object to provide an improved bridging arrangement consisting of a jog or recess along the discharge ends of the vessel to cooperate with the end of a bridge or gangplank hingedly connected to the shore, when the vessel is being urged against the shore during the discharge of its cargo so that a comparatively short length of the deck is thus required to be free for the accommodation of the bridge, to wit about eighteen inches, as compared to the bridging devices heretofore in use requiring at least a length of three to five feet of the deck of the vessel.

It is still another object of the present invention to provide an improved deck arrangement for a vehicle carrying motor driven vessel having at least three aisles consisting of two lateral aisles and a central aisle in which the lateral aisles may be used for vehicles comparatively light in weight and the central aisle especially adapted for accommodating vehicles comparatively heavy in weight in which the pilot house is formed above one of the side aisles so that the central aisle may be free to accommodate the heavier vehicles irrespective of their altitude or height.

It is still another object of the present invention to provide an improved arrangement for accommodating the allotted number of life savers for a vessel of the type referred to in which lateral rails are provided and spaces provided on the insides of said rails to accommodate the life savers.

It is still another object of the present invention to provide in the interest of conserving space, an improved arrangement for accommodating a life raft consisting in providing lateral rails and spaces inside of said rails to accommodate the life rafts in position on end.

It is still another object of the present invention to provide in a vessel of the character described an improved hull structure having a plurality of water tight compartments whereby the stowing in of any one portion may only result in the flooding of a part of the hull.

It is still another object of the present invention to provide an improved hull structure having a plurality of water tight compartments, one of which is provided with the motor engine for the vessel and lateral channels communicating from this compartment to manholes in the lateral portions of the deck with the manhole covers so arranged as to deflect the air into one or the other of the manholes of said passages depending upon the direction of the vessel and wind to cause a current of air to pass through the motor compartment and remove the exhaust gases therefrom.

These and other features, capabilities and advantages of the invention will appear from the detail description of one specific embodiment thereof illustrated in the accompanying drawings in which

Figure 1 is a side elevation of a vessel made according to the present invention;

Fig. 2 is a plan view of the same;

Fig. 3 is an end elevation of the same slightly enlarged as compared to Fig. 2;

Fig. 4 is a fragmental enlarged elevation showing the location of the life raft and life savers;

Fig. 5 is a view on the line 5—5 of Fig. 4;

Fig. 6 is a fragmental plan view enlarged showing the position of the bridge or gangplank in cooperation with the pier and boat;

Fig. 7 is a side elevation of the arrangement shown in Fig. 6; and

Fig. 8 is a fragmental section showing one end of the ventilating passageway for the motor compartment of the hull.

The vessel consists essentially of a hull 1 which is especially adapted for use with small screws in which case the hull is less than sixty-five feet and may be at least as long as sixty-four feet, ten inches. This hull is preferably provided with a flat bottom 2 terminating in the upwardly flaring walls 3 and 4 at either end thereof, on the outside of which are operably mounted the propellers 5 and 6 connected by the shafts 7 and 8 with the motor preferably located centrally of the hull, for instance at 9. The rudders 10 and 11 also are operably mounted to extend from the flaring walls 3 and 4.

The hull is in the present instance divided into five compartments by the bulkheads 12, 13 to provide the end compartments above the flaring bottoms 3 and 4 and the bulkheads 14, 15 to provide the compartment for the motor and the lateral ventilating passages extending therefrom to the outlets formed in the deck 16, one below the cover 17 and the other below the cover 18, the lateral passages from the motor compartment forming with the motor compartment a comparatively Z-shaped passage. The deck 16 terminates in the flat ends 19 and 20 adjacent to which are formed the jogs or recesses 21 and 22.

The sides of the deck 16 curve inwardly toward the ends 19 and 20 as indicated at 23, 23 and 24, 24. The sides of the hull from the deck downward, see particularly Fig. 3, incline downwardly at the middle portion as indicated at 25 and 26 toward the flat central bottom 2 and gradually curve inwardly toward the flared ends 3 and 4 as indicated.

The sides of the deck are provided with rails 27 and 28 which conform substantially to the sides of the deck and are spaced therefrom. These rails 27, 28 are preferably integral as shown and composed of sheet metal either in sections or in one piece as desired, the lower ends of the rails being connected to the deck by the angle iron 29 and the upper ends of the rails being provided with an inwardly projecting portion 30 forming part of an angle iron.

The upper sides of the projections 30, see particularly Fig. 2, are provided at their ends with the cleats 31, 31 and 32, 32 to facilitate tying the boat to the dock by halyards and the like.

The rails 27 and 28 are further provided with braces extending inwardly such as the braces 34. Between these braces 34 and below the projections 30, there are arranged the life savers 35 which are preferably provided with an apron 36 composed of canvas which extends from the extreme end of the projection 30 to cover the life saver 35 while in place and not in use.

Preferably parallel to the rails 27 and 28, one on each side of the deck 16 there are provided the life rafts 37. These life rafts consist essentially of a tubular end or border portion 38 substantially longitudinal in shape with an intervening wire mesh supporting platform 39.

With a vessel of dimensions of about sixty-four feet, ten inches in length by twenty-nine feet in width and bearing in mind the standard length of automobiles today, the deck can accommodate three rows of automobiles with four cars to a row. For a vessel of this size, depending upon the marine regulations, at least fifty life savers of about three feet in length by one and a half feet in width can be distributed and positioned inside of the rails 27 and 28 and at least two rafts 37 be positioned parallel to the rails 27 and 28 and inside of the same as indicated in Figs. 2, 4, and 5.

When the vessel is provided to accommodate three rows of cars, with vessels of the small dimensions referred to, it is of course desirable to distribute the cars so that the heavier vehicles or heavier loaded vehicles will occupy the middle row and the lighter vehicles and the lighter loaded vehicles occupy the side rows.

For this purpose, particularly bearing in mind that the heavier loaded vehicles, especially with the large motor trucks today in use, often extend fifteen feet from the supporting surface, the entire middle passage is freed of any overhanging obstruction. To this end, the pilot house is disposed to one side of the middle passage and mounted on a structure which extends over the side passage S. This pilot house 40 is supported in its raised position by the channel irons 41 and 42 extending upwardly from the sides of the rail 27, one to either end of the pilot house 40. The inner face of the pilot house is connected by the web 43 to the channel iron 44 extending upwardly from the guard 45 which divides the lateral passage S from the middle passage M. The guard 45 may be composed of any suitable material and is preferably composed of oak having tapered ends to facilitate guiding a vehicle should it strike either end of the guard 45. The guard 45 of course also serves to protect the support 44 of the pilot house 40 and also to guide the central row of vehicles away from the pilot house 40 and thus protect it against injury from a truck which could ordinarily not pass underneath the same.

Access to the pilot house 40 is provided as a rule by the ladder 46 extending from the outer face thereof down to the rail 27, an opening being provided in the outer face of the pilot 40 in communication with said ladder.

The pilot house is also provided with windows 47 on all sides thereof to facilitate the line of vision of the pilot. The deck 16 of the vessel is preferably provided with suitable manholes to afford access to the compartments thereof, as for instance the manhole 48 to the motor compartment.

The ventilation of the motor compartment by means of the lateral channels communicating with the openings 49 is facilitated by the covers 17 and 18. As an instance, the covers during the passage of the vessel from one shore to the other will preferably be maintained raised at the angle indicated in Fig. 8 in which position they will be supported by any suitable devices such as the rods 50. The mouth for each opening 49 thus provided by the cover 17 or 18 will register substantially with the opening 51 formed in the railing 27, 28. Consequently if the vessel were moving from right to left, looking at Fig. 2, the wind ordinarily encountered will be toward the bow and as a result thereof it will pass through the opening 51 to engage the cover 17 and be deflected downwardly into the lateral passage 52 to move through the motor passage 53 and out through the other lateral passage 54, discharging through the opening 49 formed under the cover 18 to engage the cover 18 and be deflected outwardly through the opening 51 in registration with such cover 18.

Of course some of the air will pass to either side of the cover 17 or 18, the openings 51 merely being provided to facilitate forcing a draft

through the continued passage formed by the lateral passage **52**, motor compartment **53** and lateral passage **54**.

On the other hand when the vessel is moving in the other direction from left to right, again the wind will ordinarily be directed against the portion of the vessel then acting as the bow and consequently pass through the opening **51** in registration with the cover **18** to engage the same and deflect downwardly through the passage **54**, motor compartment **53** and lateral passage **52** and discharge out through the opening **49** formed under the cover **17**.

The jogs or recesses **21**, **22** cooperate most intimately with the bridge or gangplank **55** to conserve the available space of the deck and facilitate using a maximum amount of such space for the vehicles to be carried. The bridge **55** as illustrated in Figs. 6 and 7 is preferably provided with any suitable connection such as the projection **56** pivotally mounted to rock in the block **57** formed on the wharf or pier **58**. The outer end of the bridge **55** is adapted to rest either in the seat formed by the recess **22**, Fig. 6, or to rest on the seat formed by the recess **21**, Fig. 2.

The thickness of the bridge, see particularly Fig. 7, corresponds substantially to the depth of the recesses **22**, **21** so that the take off from the deck **16** onto the bridge **55** will be gradual, irrespective of the angle of the bridge **55** to the deck **16** within predetermined limits. The bridge ordinarily is about thirty feet in length and since the average change of tide does not exceed six feet, it is of course apparent that at no time will the angle of inclination be objectionable to the average vehicle and the take off between the deck and the bridge be comparatively smooth and gradual at all times.

It is of course obvious that the piers or wharves of both shores touched by this vessel will be provided with such bridges **55**. The sides of the bridge **55** will be preferably provided with the ears **59** and **59'** to which the chains **60** and **61** respectively are connected, having hooks at their inner ends to engage the eyes **62** and **63** formed on the seat provided by the recess **22**. The eyes **62** and **63** will be spaced apart to clear the bridge **55** and to form guides for the proper positioning of the bridge **55**. To further guide the vessel into proper position relative to the bridge **55**, a slip will be provided by two rows of piles in the usual way, such as the piles **64** for one side of the slip and the piles **65** for the other side of the slip.

In addition to these piles **64**, **65**, there will also be provided two other groups of piles **66** and **67**, which are preferably spaced from one another a sufficient distance to accommodate the bridge **55** and spaced a short distance from the wharf or shore line.

To receive the bridge or gangplank **55**, in practice, it has been found that when a vessel comes into its slip and is secured in place, it will be necessary to have the motor running and the propeller turning over slightly to maintain the shoulder of the jog **21**, **22** against the bridge **55**. The propeller for this action may turn over ever so slightly since the momentum of the vessel itself when once urged toward the shore will tend in that direction with a slight heading force.

From the foregoing, it will appear that the present invention aims to produce a vessel of a comparatively small size having available practically its entire deck for the carrying of vehicles, that the ends of the deck which had to remain clear for at least four feet can now be occupied by cars between the narrow eighteen inch recess thus saving at least two and a half feet at either end or about five feet in the length of the available deck area, that due to the overhanging pilot house to one side of the central or middle passage there will be available a passage for the heavier loaded vehicles and the pilot house be maintained at a comparatively low altitude from the deck without interfering with such heavy loaded vehicles, that the guard on the deck between the lateral passage underneath the pilot house and the middle passage will guide the heavier loaded vehicles from encroaching upon the lateral passageway under the pilot house and thus possibly striking the pilot house, that the necessary life saving equipment such as life savers and life rafts when set on end along the rails **27** and **28** will occupy a minimum amount of space, be in position for use in case of an emergency and yet not interfere materially with the deck area available for vehicles, and that the ventilation for the engine makes it possible to contain the engine beneath the deck and yet not interrupt the deck with ventilating openings beneath the vehicles carried thereby but instead locate the ventilating openings so that they will discharge outwardly away from the vehicles carried.

It is obvious that various changes and modifications may be made to the details of construction without departing from the general spirit of the invention as set forth in the appended claims.

I claim:

1. The combination with a free deck for carrying vehicles, of a bridge operatively connected to a wharf, there being a recess at one end of said deck to receive the free end of said bridge, eyelets in said recess spaced from one another a sufficient distance to accommodate the width of said bridge between them and thereby also serve as a guide for the location of said bridge in said recess, chains for connecting the free end of said bridge to said eyelets, and a motor driven propeller for said vessel operable to insure cooperation of said bridge with said recess.

2. The combination with a free deck for carrying vehicles, of a bridge operatively connected to a wharf, a group of piles to either side of said bridge spaced from the wharf, said groups of piles being adapted to receive an end of said deck when the vessel docks, there being a recess at one end of said deck to receive the free end of said bridge, permanent fastening means in said recess spaced from one another sufficiently to accommodate said bridge between them and thereby serve as a guide for the location of said bridge is said recess, chains for connecting said bridge to said fastening means, a motor driven propeller for said vessel operable to insure cooperation of said bridge with said recess, and a slip of piles for guiding the vessel into operative relation with said bridge and groups of piles.

3. In a vessel, the combination with a hull, of a deck for said hull free to carry vehicles, transversely extending bulkheads forming end compartments, longitudinally extending bulkheads connected to said end compartments, short transverse bulkheads connected to said longitudinal bulkheads to form lateral passages from the compartment formed between said longitudinal bulkheads, a propeller for said vessel, an internal combustion engine mounted in the compartment between said longitudinal bulkheads, openings at

the ends of said lateral passages formed in the deck adjacent to the sides of the vessel, covers for said openings, and means for supporting said covers at an angle to facilitate directing a draft from one lateral passage to the other lateral passage through said engine containing compartment.

4. In a vessel, the combination with a hull, of a deck for said hull free to carry vehicles, transversely extending bulkheads in said hull to form end compartments, longitudinally extending bulkheads connected to said transversely extending bulkheads and spaced from one another to form a central compartment, a short transverse bulkhead extending from one end of one of said longitudinally extending bulkheads toward the side of the vessel, a second short transverse bulkhead extending from the other end of the other longitudinal bulkhead toward the other side of the vessel, said short transverse bulkheads forming with said longitudinal bulkheads two lateral passages from said central compartment, a propeller at each end of said vessel, an internal combustion engine in said central compartment operatively connected to said propellers, openings in the deck of said vessel at either side to the lateral ends of said lateral passages, covers for said openings, and means for supporting said covers at an angle to direct a draft into one lateral passage through said central compartment and out through said other lateral passage.

5. In a vessel, the combination with a hull, of a deck for said hull free to carry vehicles, transversely extending bulkheads in said hull to form end compartments, longitudinally extending bulkheads connected to said transversely extending bulkheads and spaced from one another to form a central compartment, a short transverse bulkhead extending from one end of one of said longitudinally extending bulkheads toward the side of the vessel, a second short transverse bulkhead extending from the other end of the other longitudinal bulkhead toward the other side of the vessel, said short transverse bulkheads forming with said longitudinal bulkheads two lateral passages from said central compartment, a propeller at each end of said vessel, an internal combustion engine in said central compartment operatively connected to said propellers, openings in the deck of said vessel at either side to the lateral ends of said lateral passages, covers for said openings, means for supporting said covers at an angle to direct a draft into one lateral passage through said central compartment and out through said other lateral passage, railings along each side of said vessel, and openings formed in said railings registering with the mouths formed by said covers.

6. In a vessel, the combination with a free deck for carrying vehicles, of imperforate side rails to either side of said deck, life savers extending vertically on the inside of said rails, overhanging angle portions extending above certain life savers, and canvas aprons extending downward from said angle portions to enclose said life savers when not in use.

7. The combination with a free deck for carrying vehicles, of a bridge operatively connected to a wharf, there being a recess at one end of said deck to receive the free end of said bridge, eyelets in said recess spaced from one another a sufficient distance to accommodate the width of said bridge between them and thereby also serve as a guide for the location of said bridge in said recess, and chains for connecting said bridge to said eyelets.

8. The combination with a free deck for carrying vehicles, of a bridge operatively connected to a wharf, a group of piles to either side of said bridge spaced from the wharf, said groups of piles being adapted to receive an end of said deck when the vessel docks, there being a recess at one end of said deck to receive the free end of said bridge, permanent fastening means in said recess spaced from one another sufficiently to accommodate said bridge between them and thereby serve as a guide for the location of said bridge in said recess, and chains for connecting said bridge to said fastening means.

9. In a vessel, the combination with a free deck for carrying vehicles, of imperforate side rails to either side of said deck having inwardly extending overhanging imperforate extensions at their upper ends, life savers vertically mounted on the inside of said rails under said extensions, and flexible aprons extending downward from said extensions to enclose said life savers when not in use.

10. In a vessel, the supporting surfaces for the combination with a hull, of a free deck on said hull forming passageways for carrying vehicles, bulkheads in said hull for dividing said hull into compartments, a propeller for said vessel, an internal combustion engine for said propeller mounted in one of said compartments, openings in the deck of the vessel in communication with the front end and rear end of said engine containing compartment and disposed on opposite sides of the vessel clearing the passageways for the vehicles supported on said deck, a cover associated with each opening and hinged on a horizontally extending pivot and movable upward away from the adjacent side of the vessel, and rails along the lateral outer sides of said deck having openings therein adjacent the openings in said deck to facilitate a draft from one set of said openings in the rail and deck through said engine compartment to and through the other set of openings in said rail and deck.

11. In a vessel, the supporting surfaces for the combination with a hull, of a free deck on said hull forming passageways for carrying vehicles, a propeller for said vessel, an engine for said propeller mounted in said hull, the deck being provided with openings in communication with the engine containing compartment formed by said hull, said openings being disposed in the sides of said deck to clear the passageways for the vehicles supported on said deck, one opening being formed at one end of the engine containing compartment and the other opening at the other end of the engine containing compartment to facilitate a draft through said compartment whether the vessel is going in one head on direction or the other, a cover associated with each opening and hinged on a horizontally extending pivot and movable upward away from the adjacent side of the vessel, and rails along the lateral outer sides of said deck having openings therein adjacent the openings in said deck to facilitate a draft from one set of said openings in the rail and deck through said engine compartment to and through the other set of openings in said rail and deck.

12. The combination with a deck for carrying vehicles, of a bridge operatively connected to a wharf, a group of piles to either side of said bridge spaced from the wharf, said groups of piles being adapted to receive an end of said

deck when the vessel docks, there being a recess at one end of said deck to receive the free end of said bridge, permanent fastening means secured to said deck and spaced from one another to accommodate said bridge between them and thereby serve as a guide for the location of said bridge in said recess, and means secured to the edges of said bridge for cooperating with said fastening means to fasten said bridge to said deck when the vessel is docked.

13. The combination with a deck for carrying vehicles, of a bridge operatively connected to a wharf, a group of piles to either side of said bridge spaced from the wharf, said groups of piles being adapted to receive an end of said deck when the vessel docks, fastening means secured to said vessel adjacent to the end of the vessel nearest to the wharf and spaced from one another sufficiently to accommodate said bridge between them and thereby serve as a guide for the location of said bridge on the end of said deck, and means secured to the sides of said bridge for cooperating with said fastening means to fasten said bridge to said deck when the vessel is docked.

14. The combination with a free deck for carrying vehicles, of a bridge operatively connected to a wharf, there being a recess at one end of said deck to receive the free end of said bridge, permanent fastening means secured to said deck and spaced from one another a sufficient distance to accommodate said bridge between them and thereby serve as a guide for the location of said bridge in said recess, and means secured to the edges of said bridge and for cooperating with said fastening means to fasten said bridge to said deck when the vessel is docked.

15. In a vessel, the combination with a hull having an engine compartment, a deck forming the supporting surface for a plurality of passageways for vehicles, an engine in said engine compartment below said deck, side rails along the outer sides of said deck, a pilot house, a support for the pilot house extending up adjacent one of said rails and between an outermost vehicle passageway and an adjacent inner vehicle passageway, there being openings in said deck on opposite sides of said vessel adjacent said rails and in communication with the ends of said engine compartment, and there being openings in said rails, one adjacent each of the openings in said deck, and covers clearing the outer sides of the outermost vehicle passageway and hinged on the inner longitudinally extending edges of the openings in said deck to incline upwardly to cooperate with the openings in said rails to guide the air into one of the openings in said deck and through the engine compartment to and through the other opening in said deck.

16. In a vessel, the combination with a hull having an engine compartment, a deck forming the supporting surface for a plurality of passageways for vehicles, an engine in said engine compartment below said deck, side rails along the outer sides of said deck, a pilot house mounted on said deck to clear the supporting surface of said passageways, there being openings in said deck on opposite sides of said vessel adjacent said rails and in communication with the ends of said engine compartment, and there being openings in said rails, one adjacent each of the openings in said deck, and covers clearing the outer sides of the outermost vehicle passageway and hinged on the inner longituidnally extending edges of the openings in said deck to incline upwardly to cooperate with the openings in said rails to guide the air into one of the openings in said deck and through the engine compartment to and through the other opening in said deck.

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