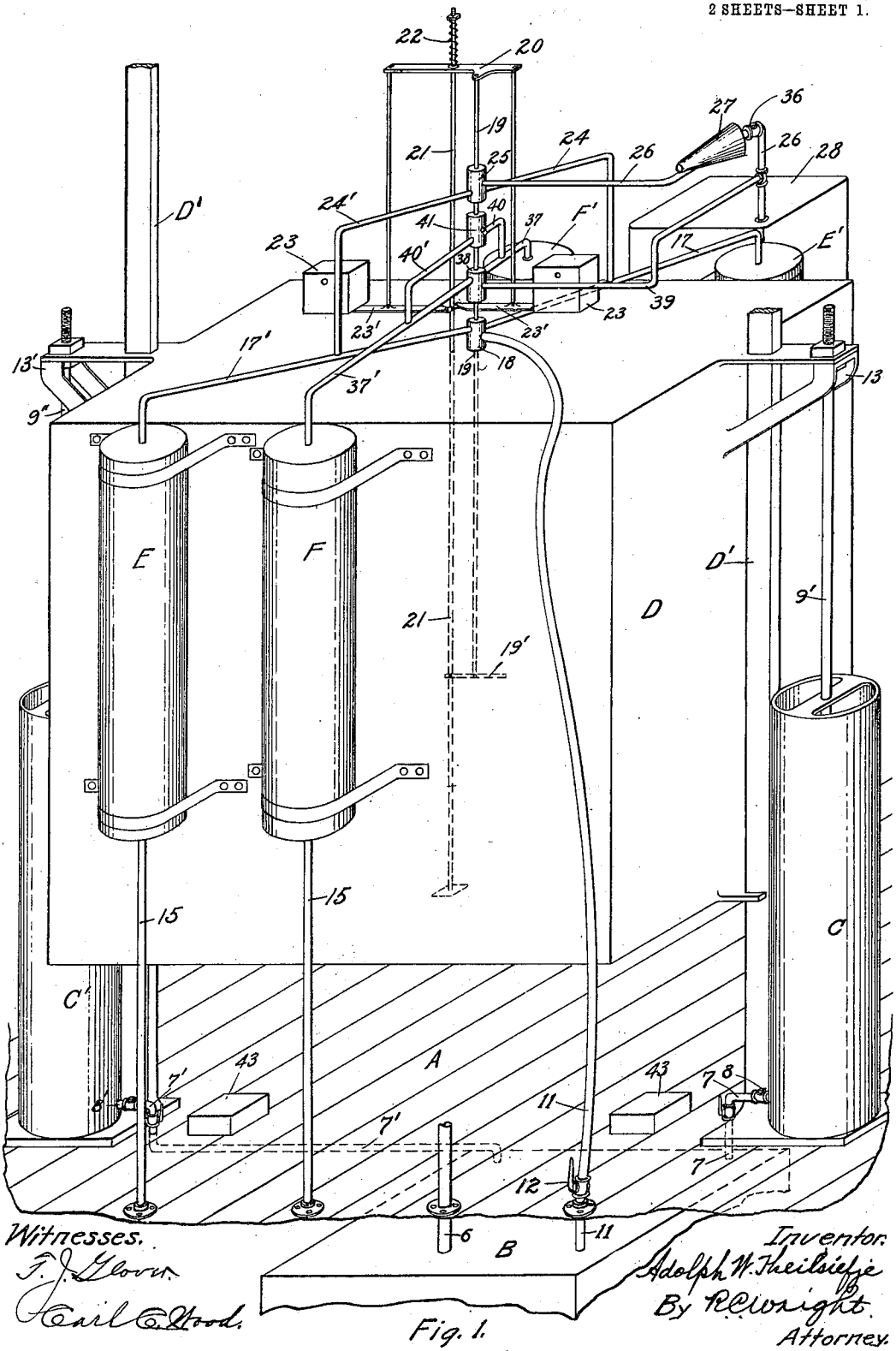
A. W. THEILSIEFJE.

PASSENGER DEVICE FOR EQUALIZING SHIP MOTION.

APPLICATION FILED MAR. 21, 1910.

961,911. Patented June 21, 1910.

2 SHEETS—SHEET 1.



Witnesses.
F. J. Glover.
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Fig. 1.

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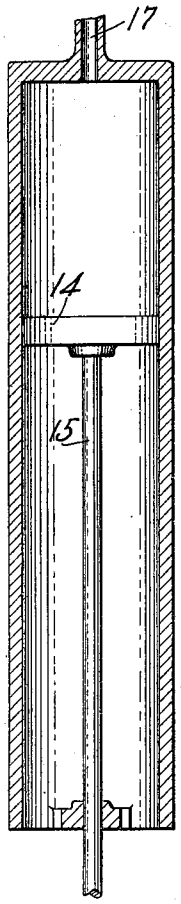

Fig. 2

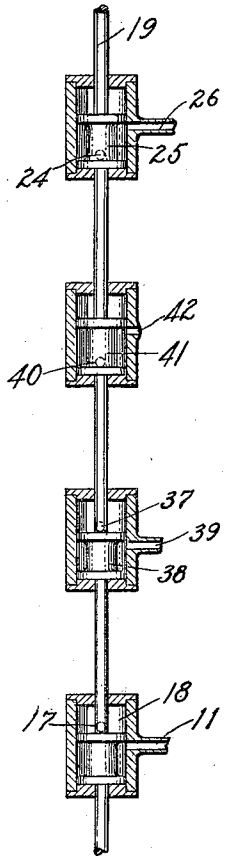

Fig. 4.

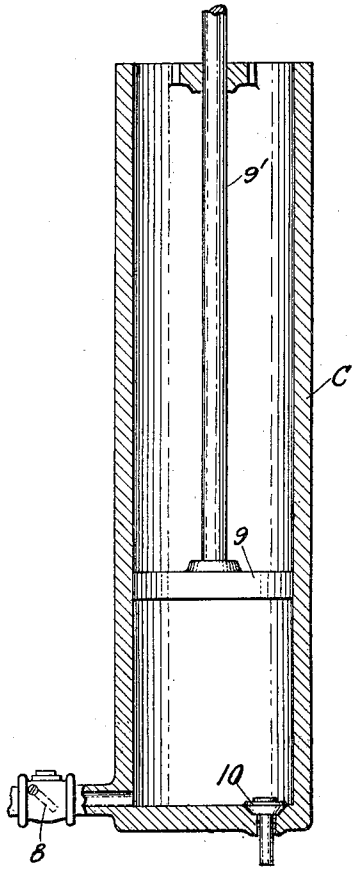

Fig. 3.

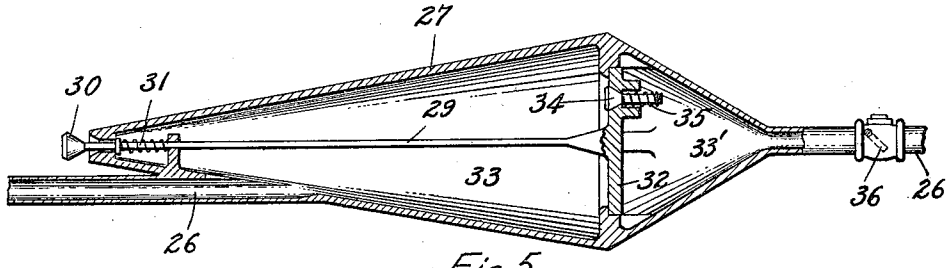

Fig. 5.

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UNITED STATES PATENT OFFICE.

ADOLPH W. THEILSIEFJE, OF RIDGEFIELD, WASHINGTON.

PASSENGER DEVICE FOR EQUALIZING SHIP MOTION.

961,911. Specification of Letters Patent. Patented June 21, 1910.

Application filed March 21, 1910. Serial No. 550,778.

To all whom it may concern:

Be it known that I, ADOLPH W. THEILSIEFJE, a citizen of the United States, residing at Ridgefield, in the county of Clarke and State of Washington, have invented a new and useful Improvement in Passenger Devices for Equalizing Ship Motion, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to a class of devices to be placed in ships, and having platforms or cars for the accommodation of passengers, which platforms or cars may be kept on a mean level irrespective of the motion of the ship, and thus prevent seasickness.

The object of my invention is to provide such a device in which the upward and downward movement of a car is overcome by an arrangement of pneumatically controlled machinery. I attain this object as well as other advantages by the construction, combination and arrangement of parts illustrated in the accompanying drawings, which form a part hereof.

Figure 1 is a perspective view of the assembled device, the car being partly above the vessel's deck. Fig. 2 is an enlarged cross sectional view of the pressure cylinder. Fig. 3 is an enlarged cross sectional view through one of the pumping cylinders. Fig. 4 is an enlarged cross sectional view through the inlet and exhaust valves. Fig. 5 is an enlarged cross sectional view through the low pressure tank equalizer.

A represents the deck of a vessel.

B is a reservoir below the deck, only a portion being visible. This reservoir is of form and size as may be most convenient, and is to be filled with air under pressure, transmitted from any suitable power source into the reservoir through the pipe 6. This reservoir is subsequently charged with air as may be necessary in accordance with loss of air from it by exhaust, as will hereafter be shown.

C C′ are pumping cylinders rigidly secured at their lower ends to the deck A. They are provided with pipes 7—7′ which extend from within their lower ends into the reservoir B. The pipes 7—7′ are provided with check valves 8—8′, see more particularly Fig. 3. Within these cylinders are vertically movable pistons 9 (Fig. 3) and piston rods 9′—9″. The cylinders C C′ are also provided with inlet foot valves 10 as shown in Fig. 3.

11 is a flexible pipe extending from within the reservoir B into the valves of the high pressure cylinders. A stop cock 12 may be placed in this pipe.

D is a car within which may be placed any suitable accommodations for passengers. This car is rigidly secured at each side to the upper ends of the piston rods 9′—9″ by means of the hangers 13—13′. The car is also kept in vertical position by guides D′—D′.

E—E′ and F—F′ are high and low pressure cylinders rigidly secured to opposite sides of the car D. Within these cylinders are pistons 14 as shown in Fig. 2 and vertical piston rods 15 connected therewith, the lower ends of said rods being rigidly secured to the deck A.

From within the upper ends of the cylinders E—E′, pipes 17—17′ extend into a common valve 18. A vertical valve stem 19 is provided for this valve, the lower end of the stem being secured to a lever 19′ which is pivoted on the guide 21 within the car D. This stem 19 is also a common valve stem for three valves above 18. It has rigidly secured to, and supports on its upper end, a vertical frame 20. This frame is retained in position by a guide 21 passing through it, and having its lower end secured to the floor of the car D. Near the top of the guide 21 and above the frame 20 is a recoil spring 22. The lower part of the frame 20 carries two small reservoirs 23 which are filled with a gas lighter than air to reduce the specific gravity of the frame 20. The horizontal arms of the reservoirs 23′ are pivoted on the guide 21.

From the pipes 17—17′ extend pipes 24—24′ into a valve 25 on the stem 19 and from the valve 25 extends a pipe 26 through an equalizer 27 into a low pressure reservoir 28. The equalizer 27, see Fig. 5 is provided with a valve stem 29, one end of which extends without the equalizer and carries thereon a check valve 30. Within the equalizer the stem 29 carries a recoil spring 31 near the outer end. On the opposite end of the stem 29 it carries a larger valve

plate 32, which divides the equalizer into two chambers 33—33′. In the valve plate 32 is a secondary check valve 34 having a recoil spring 35 thereon. In the pipe 26 between the equalizer and the reservoir 28 is placed a check valve 36.

From within the upper ends of the cylinders F—F′, pipes 37—37′ extend into a common valve 38. From the valve 38 a pipe 39 extends into the lower pressure tank 28. From the pipes 37—37′ extend pipes 40—40′ into a valve 41 on the stem 19. In the body of the valve 41 is an exhaust opening 42. Rubber impact cushions 43 are provided on the deck A below the car D.

It will now be seen that for a primary proposition, the car D is to be retained by my mechanism at nearly a stationary height from the bed of the sea or stream traversed. That is to say, the pneumatic control of the car is to prevent its vertical movement beyond a very negligible distance. This is accomplished in the following manner. The reservoir B must first be charged with air under a sufficient pressure. If the vessel rises on a swell the frame 20 having its weight neutralized bears downward. In doing so it closes the ports of the pipes 11 and 39 of the high and low pressure cylinders E—E′ and F—F′ and at the same time opens the exhaust ports 26 and 42 of the exhaust valves 25 and 41. These positions of the valves cause the air from the cylinders E—E′ to flow through the pipes 17—17′, 24—24′, the exhaust valve 25, pipe 26 and equalizer 27 into the low pressure reservoir 28. At the same time the air in the cylinders F—F′ flows through the pipes 37 and 40 and valve 41 into the open air. The exhaustion of air into the cylinders E—E′ and F—F′ allows the vessel to ascend without raising the car with it.

It will also be noted that during the aforesaid operation that when air passes through the pipe 26 into the equalizer 27 the result is as follows. The air passes first into the chamber 33 of the equalizer moving the valve plate 32, closing the valve 30 and allowing air to pass into the chamber 33′ and thence into the reservoir 28. When the exhaust pressure from the high service cylinders has been balanced in the reservoir 28, the reflex pressure closes the valve 36 in the pipe 26 and causes the valve plate 32 to close the chamber 33′. In doing this it also opens the valve 30 and the liberation of the air in the chamber 33 opens the auxiliary valve 34 in the valve plate 32 and thus prevents trapping of air in the chamber 33′. It is also to be noted that the foot valve 10 of reservoirs C—C′ opens and they receive air while the check valves 8—8′ are closed.

When the vessel descends into the trough of the sea, a reverse operation takes place. The frame 20 rises a sufficient distance to reverse the valves. In doing so the valves 25 and 41 are closed and the valves 18 and 38 opened. This allows air from the reservoir B to flow through the valve 18 into the high pressure cylinders E—E′ and air from the low pressure reservoir 28 to flow through the pipe 39 and valve 38 into the low pressure cylinders F—F′. At the same time the foot valves 10 of the reservoirs C—C′ close and the check valves 8—8′ open, allowing the downward movement of the pistons 9 in these reservoirs to force any excess air into the reservoir B. This operation just described allows the vessel to descend without carrying the car with it.

It is intended that the car in my device shall be prevented from ascending or descending any appreciable amount with the movement of the vessel, by means of a cushion of air resisting such movement on the part of the car. The arrangement of parts for the purpose of using the weight of the car to pump air into the reservoir B and the using of secondary pressure are for economy of operation and to avoid the necessity so far as possible of recharging the reservoir B from a power source. It is believed that my device will fully overcome the motion of the vessel which is so unpleasant and is the cause of seasickness, and enable a passenger to be always in a uniform position with respect to the bed of the ocean or stream.

Having thus fully described my invention I claim:

In a passenger device for equalizing ship motion, the combination with a vessel of a pressure reservoir B and means therein to receive power from a power source, vertical pumping cylinders C—C′ secured to the vessel deck, having therein pistons, also provided with valved pipes extending into the reservoir B and with foot valves in their lower ends, a passenger car D rigidly secured at the sides to the upper ends of the pumping cylinder pistons, means to retain the car in vertical position, vertical high pressure and low pressure cylinders E—E′ and F—F′ rigidly secured upon the sides of the car, each containing pistons, the lower ends of which are secured to the vessel deck, a pipe 11 extending from the reservoir B into valves of the high pressure cylinders, inlet valves 18 and 38 and exhaust valves 25 and 41, pipe connections from reservoirs E—E with valves 18 and 25, pipe connections from reservoirs F—F′ with valves 38 and 41, a low pressure tank 28, pipe connection from the same to the valve 38, also to the valve 25, the latter pipe being provided with a cut-off valve, also a pressure equalizer in said pipe having means therein to admit the flow of air into the low pressure reservoir and to allow an exhaust when the pressure in the latter reservoir is equal-

ized, a valve stem 19 common to the inlet and exhaust valves, said stem being pivoted at its lower end to a lever pivoted on a vertical guide, a frame 20 secured to the upper end of the common valve stem and a guide to retain the frame in vertical position, means secured to the frame to decrease its specific gravity, all substantially as described.

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Witnesses:
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