

W. LOGUSZ.

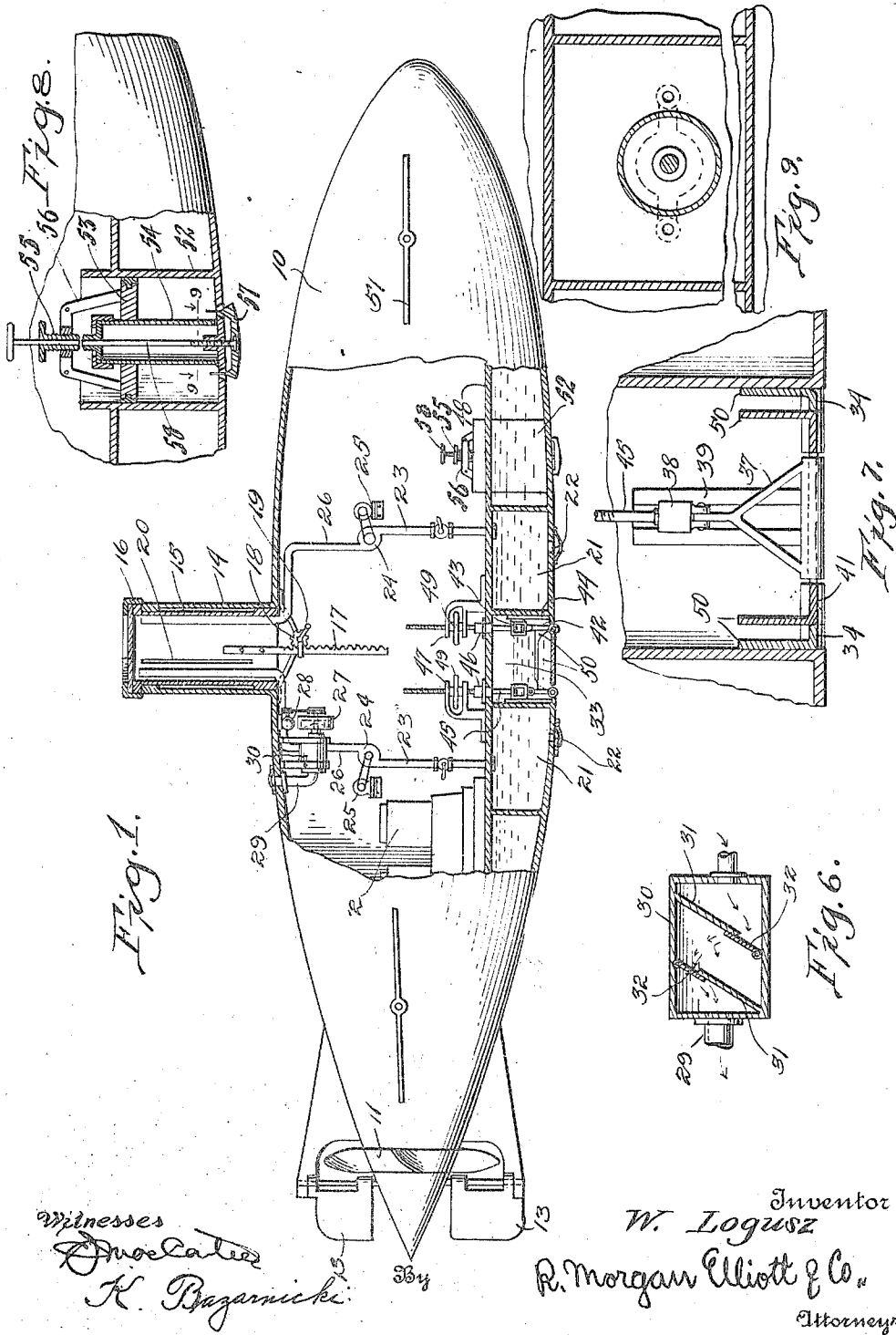
SUBMARINE.

APPLICATION FILED JAN. 29, 1918.

Patented Feb. 18, 1919.

2 SHEETS—SHEET 1.

1,294,922.



Witnesses

Shoemaker

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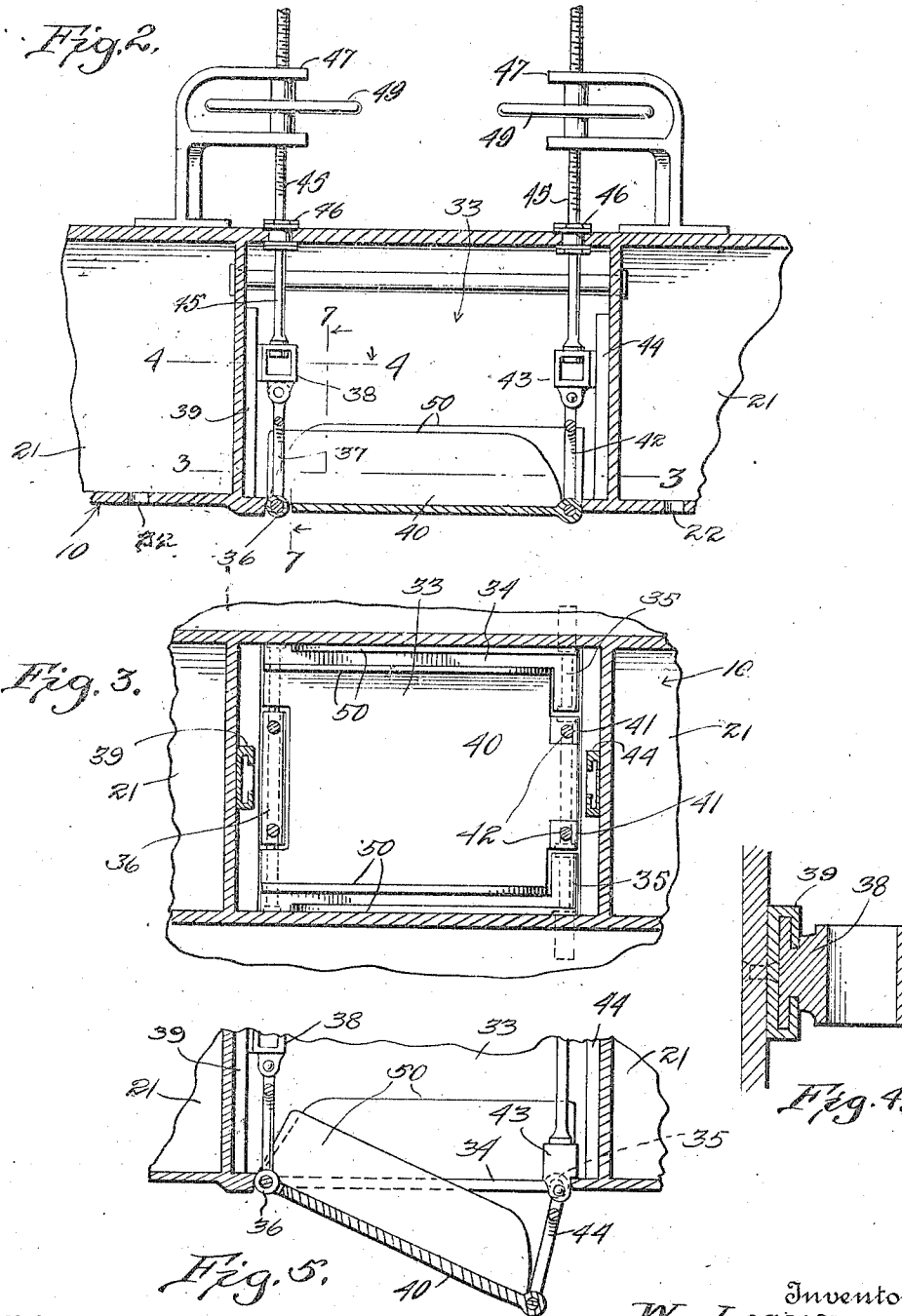
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Witnesses
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UNITED STATES PATENT OFFICE.

WASYL LOGUSZ, OF ST. LOUIS, MISSOURI.

SUBMARINE.

1,294,922.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WASYL LOGUSZ, a subject of the Emperor of Austria, residing at St. Louis, in the county of St. Louis and State of Missouri, have invented certain new and useful Improvements in Submarines, of which the following is a specification.

This invention relates to submarines and has special reference to submerging mechanism for vessels of this description.

One important object of the invention is to provide an improved and simplified submerging mechanism so arranged that motion of the submarine through the water will be used to effect the filling of the submergence controlling compartment with water under air pressure or the relief of such compartment from the water.

A second important object of the invention is to provide a novel arrangement of scooping door for use in connection with submergence compartments or submarines.

With the above and other objects in view, as will be hereinafter apparent the invention consists in general of certain novel details of construction and combinations of parts hereinafter fully described, illustrated in the accompanying drawing, and specifically claimed.

In the accompanying drawing, like characters of reference indicate like parts in the several views, and:—

Figure 1 is a side elevation, partly in section, showing a submarine equipped with the invention.

Fig. 2 is an enlarged detail view of the submergence compartment, the view being a vertical median section thereof.

Fig. 3 is a section on the line 3—3 of Fig. 2.

Fig. 4 is a detail section on the line 4—4 of Fig. 2.

Fig. 5 is a view similar to Fig. 2 showing the lower portion of said figure with the scoop door dropped.

Fig. 6 is a detail section through a check baffle used in connection herewith.

Fig. 7 is a section on the line 7—7 of Fig. 2.

Fig. 8 is a detail sectional view, and

Fig. 9 is a section on line 9—9 of Fig. 8.

In carrying out the objects of this invention there is provided a submarine having a hull 10 of the usual form, the submarine being driven by a propeller 11 from an

engine 12 and being steered by suitable rudders 13.

On top of the submarine is a telescoping conning tower comprising an outer cylindrical section 14 and an inner cylindrical section 15 slidable vertically within the outer section and provided with a closure 16 at its top. The inner section may be raised and lowered at will by means of a rack 17 secured to the section and having a pinion 18 meshing therewith, the pinion being operated by a suitable crank 19. Moreover, the inner section is provided with a glass covered depth gage 20 so that when the section is raised the depth of submersion may be noted through this gage.

Located at each side of the center of the bottom is a pair of air controlled submergence tanks 21 each having an opening 22 at its bottom through which it may be blown out. These tanks are controlled by air supplied by pipes 23 leading to fans 24 operated by motors 25. The pipes leading to these motors are indicated at 26 and extend up in the conning tower so that when the closure 16 is removed air may be drawn down through these pipes and, by means of the fans 24, blown through the pipes 23 to eject water in the compartments 21. In order to draw off foul air from the submarine without danger of water rushing in, a fan blower 27 may be employed which is driven from a motor 28. This fan blower communicates with a pipe 29 leading to the outside of the submarine and in this pipe is a baffle chamber 30 wherein are baffles 31 so arranged as to cause the outflowing air to pass in a zig-zag path as indicated by the arrows in Fig. 6. Moreover, check valves 32 are provided to prevent backward flow through the valve body 30.

Between the two compartments 21 is located a special submergence compartment 33 and it will be seen that this compartment is closed on the top and sides and open at the bottom through the bottom of the hull 10. Mounted in the open bottom is a frame including side bars 34 and at one of the athwartships edges of this frame there is provided hinges 35 by means of which the frame is hingedly fixed to the hull. At the opposite edge there is provided a hinge 36 to which is connected a yoke 37 forming a link the upper end of which is pivoted to a sliding block 38 vertically movable in a guide 39 fixed to one of the side walls of

the compartment. On this hinge 36 is hinged a door 40 and on the free edge of this door is a hinge 41 likewise provided with a link 42 connected to a sliding block 43 operating in a vertical guide 44. To each of these blocks 38 and 43 there is connected a screw 45 which passes through a stuffing box 46 in the top of the compartment and through a yoke 47 mounted on the working deck 48 of the submarine. In each of the yokes 47 is held a hand wheel 49 the center of which forms a nut through which passes the respective screw 45. Moreover, both the frame and the door are provided with scoop sides 50. Now it will be observed by this construction that the compartment 33 being air tight and filled with air the forward or after edge of the door and frame may be lowered at will by the proper manipulation of the respective hand wheel 49. When the forward edge is dropped, in the present arrangement, only the door will descend and under these conditions the forward movement of the submarine will scoop water into the compartment 33 and cause compression of the air in said compartment so that the compartment becomes partly filled with water and partly filled with compressed air. This naturally will decrease the displacement of the submarine so that it will tend to sink, and the sinking of the submarine being assisted by suitable diving rudders 51. When it is desired to free the compartment 33 from the water the free edge of the door is raised and the after edges of the frame and door are lowered by means of the other screw 45. The compressed air in the compartment 33 will free the compartment of all water and together with a slight suction which will be induced as the submarine passes through the water thereby lightening the submarine so that it will readily rise.

There has thus been provided a simple and efficient device of the kind described and for the purpose specified.

It is obvious that many minor changes may be made in the form and construction of the invention without departing from the material principles thereof. It is not therefore desired to confine the invention to the exact form herein shown and described but it is wished to include all such as properly come within the scope claimed.

In Figs. 8 and 9 is shown a balancing device, by means of which the submarine can be simply and effectually brought onto an even keel. Thus, the cylinder 52 carries a piston 53 and a guide casing 54, the latter being fixed with relation to the cylinder so that the piston moves between the two elements 52 and 53. The piston is movable by means of threaded stem 55, which passes through a yoke 56 and is also supported on top of the casing 54. A valve 57 controlled by a stem 58 admits the water to the cylinder while the piston is used to expel the water, one of the devices being located at each end of the vessel.

Having thus described the invention, what is claimed as new, is:—

1. The combination with a submarine vessel having an air containing balancing compartment closed at its top and sides; of a door for the bottom of said compartment, hinges at the forward and after edges of said door, and means to lower either of said hinged edges selectively.

2. The combination with a submarine vessel having an air containing submergence regulating compartment in its lower portion; of means controlled from within the submarine and arranged to effect the forcing of water out of said compartment by the pressure of the air therein and the drawing of water out of said compartment by the forward movement of the submarine through the water.

3. The combination with a submarine vessel having an air containing submergence controlling compartment therein, said compartment being closed at the top and sides and opening downward through the bottom of the submarine; of a frame fitting in the bottom of the compartment, a vertically movable hinge at one of the athwartship edges of the frame; a fixed hinge connection between the opposite edge of the frame and the body of the submarine, a door to close the space within the frame and carried by the first hinge, a second vertically movable hinge connected to the free edge of the door and alined with the fixed frame hinge upon closing of the door, and scoop sides on said door and frame.

In testimony whereof I affix my signature.
WASYL LOGUSZ.