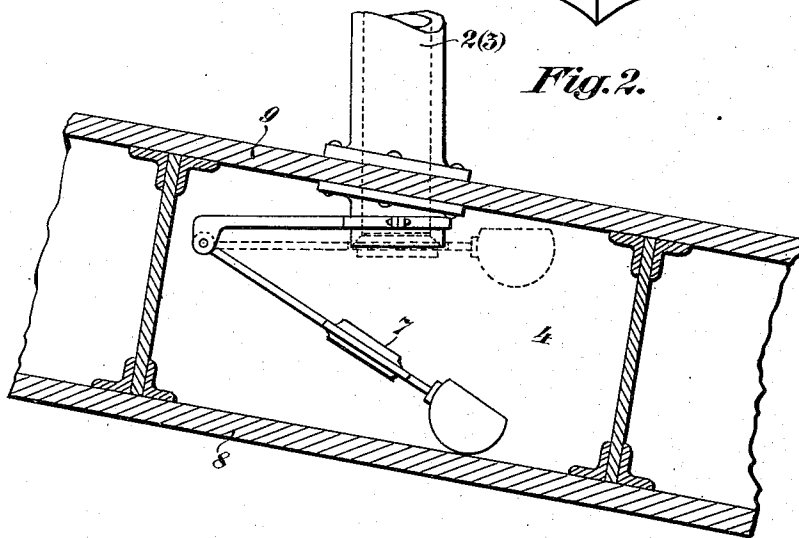
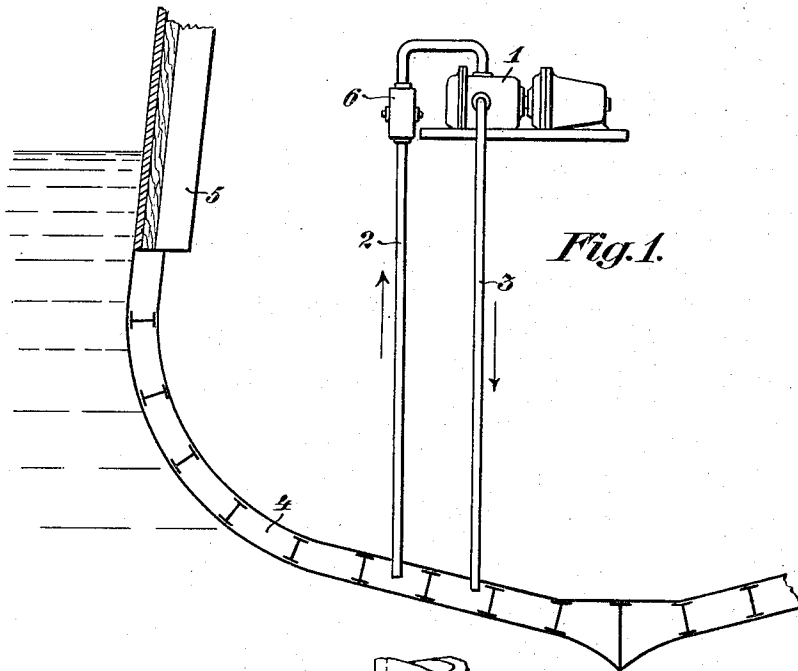


H. WEISS.
 COOLING DEVICE FOR ELECTRICAL MACHINES MOUNTED ON VESSELS.
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1,156,829.

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COOLING DEVICE FOR ELECTRICAL MACHINES MOUNTED ON VESSELS.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HEINRICH WEISS, subject of the Emperor of Austria-Hungary, residing at Vienna, Austria-Hungary, have invented certain new and useful Improvements in Cooling Devices for Electrical Machines Mounted on Vessels, of which the following is a specification.

Electrical machines mounted on the board of self propelled vessels, boats or steamers must be cooled in a most efficient way since they work generally in rooms with high surrounding temperatures. Especially big generators produce so much heat that the ordinary ventilation of machine rooms cannot be considered as sufficient. In such cases the machine itself must be cooled. Up till now the cooling effect was obtained by the circulation of air, the fresh air being taken from the outside of the steamer. This however is not an ideal solution since the cooling air contains much humidity and salt, especially when the sea is rough. The effect is that the wet air causes rust and corrosions of all metallic parts. If filters are employed they become full of salt and even smoke, carbon and other materials arrive to the interior of the machinery. All these inconveniences can be overcome if the cooling effect is produced by a circuit of cooling air moving in a closed space instead of being obtained by the aspiration of air from the outside. Entirely inclosed electrical machines which are cooled by a closed circuit of air are well known in the industry.

The new invention consists in the facts, first that inclosed machines mounted on board can be equipped with such cooling devices without necessitating the installation of special space holding air tanks for the inclosed quantity of circulating cooling air and second that the circulating air is cooled by the outside shell, of the vessel. The cooling may be effected under the level of the sea.

The invention applies especially well when the steamers are equipped with double wall bottoms or double shells. In such cases one part or certain cells of the inclosed space can be utilized as an airtank. In many cases lateral spaces (like the wing passages on the warships) can be employed for the same purpose.

In the drawings the invention is schematically shown by way of example.

Figure 1 shows a vertical cross section through a ship, Fig. 2 shows on an enlarged scale a cross section through the double walled bottom with a safety valve at the air pipe.

The electrical machine 1 which may be a turbo-generator is completely inclosed. The shell has openings for the inlet and the outlet of the air. Pipings 2 and 3 go to the air tank. An air tank may either serve the space or some of the cells 4 between the two bottom walls or the air tank may be located on the lateral parts 5 of the shell. The circulation of air is obtained by a fan 6 which can either be mounted on the axle of the generator or may be provided for erection on a separate bedplate. One fan may supply the air for several generators. The air coming from the electrical machine is cooled by the surface of the outside shell of the vessel and can continually be reemployed in order to cool the machinery. An advantage of this arrangement is the utilization of the empty space between the double walls of the bottom which cannot otherwise be employed. A further advantage is that no special air tanks are needed on board. This saving is of great importance, the available space being limited in nearly all the cases.

If the machines which have to be cooled are mounted above the level of the sea a valve may be provided above the sea level in order to avoid any entering of water even if the outside shell should leak. In case the machines are mounted under the sea level, an automatic obturator has to be provided which closes the air pipes as soon as water enters the cooling air cell. In Fig. 2 such a cell 4 arranged between the outer and the inner bottoms 8 and 9 of the vessel is shown provided with a floating device by which a valve 7 is pressed against the opening of the air pipe (2 or 3) as soon as water enters the cell 4 in which the floating device is located. By the described way the outside wet and salt containing air is not employed for the cooling of machinery on ocean steamers and further the cooling effect remains quite independent of the conditions of the weather and of the sea and since well cooled generators have a much higher efficiency as machines with bad cooling de-

vices or no cooling devices at all, it follows that the described invention allows to employ for a given output smaller, less expensive and better machines than before.

5 Having now described my invention, what I claim is:

1. The combination of a vessel having an air container, one wall of which is formed by the outer shell of the vessel and is in
10 contact with the water in which the vessel floats, an air-jacketed motor or machine, conduits connecting the air container and the air jacket and forming therewith a closed air circuit, and means for maintain-
15 ing a circulation of air in said circuit.

2. The combination of a vessel having inner and outer shells defining an air space,
a motor or engine having an air jacket, conduits connecting the air jacket with the air
20 space between the shells and forming there-

with a closed air circuit, and means for maintaining a circulation of air through said circuit.

3. The combination of a vessel having inner and outer shells defining an air space, 25 a motor or engine having an air jacket, conduits connecting the air jacket with the air space between the shells and forming therewith a closed air circuit, means for main-
30 taining a circulation of air through said circuit, and a float valve to prevent the entrance of water through the inlet end of the inlet conduit.

In testimony whereof I affix my signature in presence of two witnesses.

HEINRICH WEISS.

Witnesses:

RICHARD KOMINIK,
AUGUST FUGGER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."