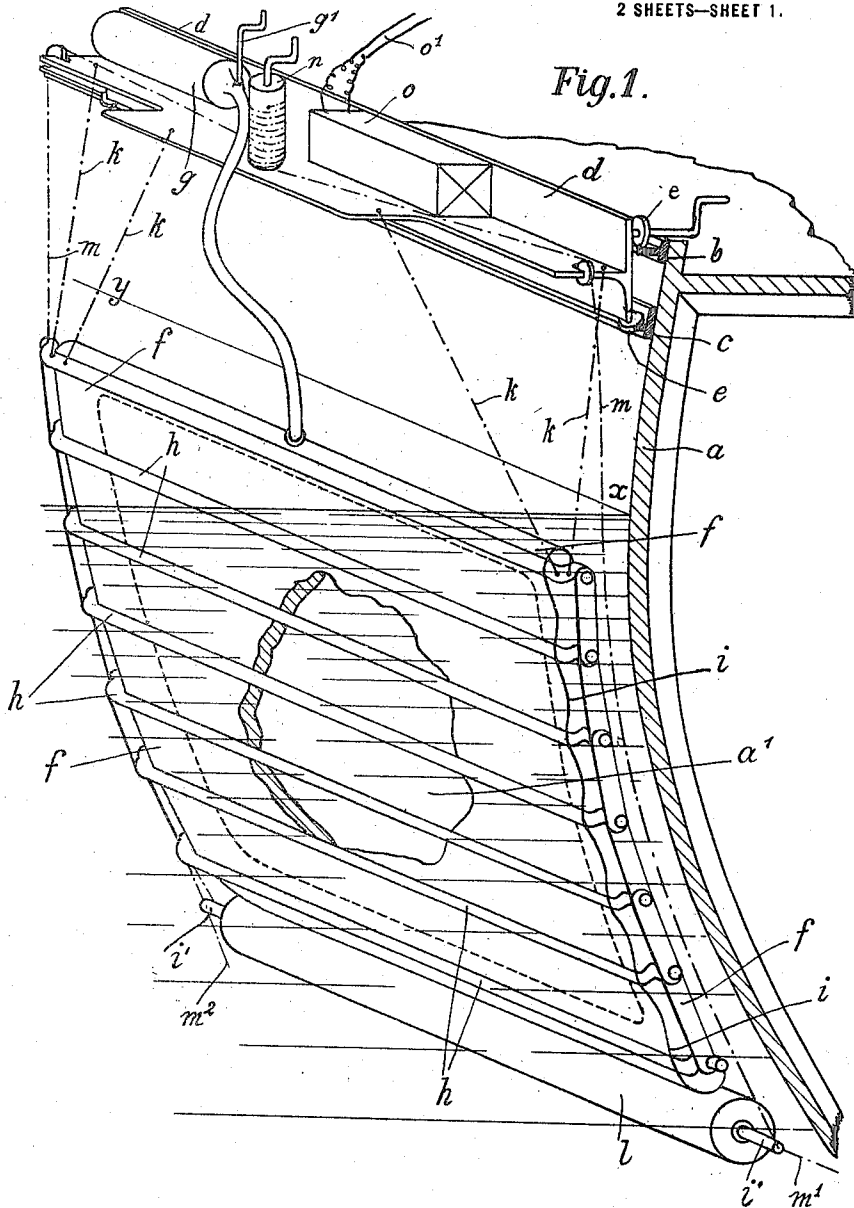


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APPLICATION FILED SEPT. 19, 1916.

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Patented Apr. 3, 1917.

2 SHEETS—SHEET 1.



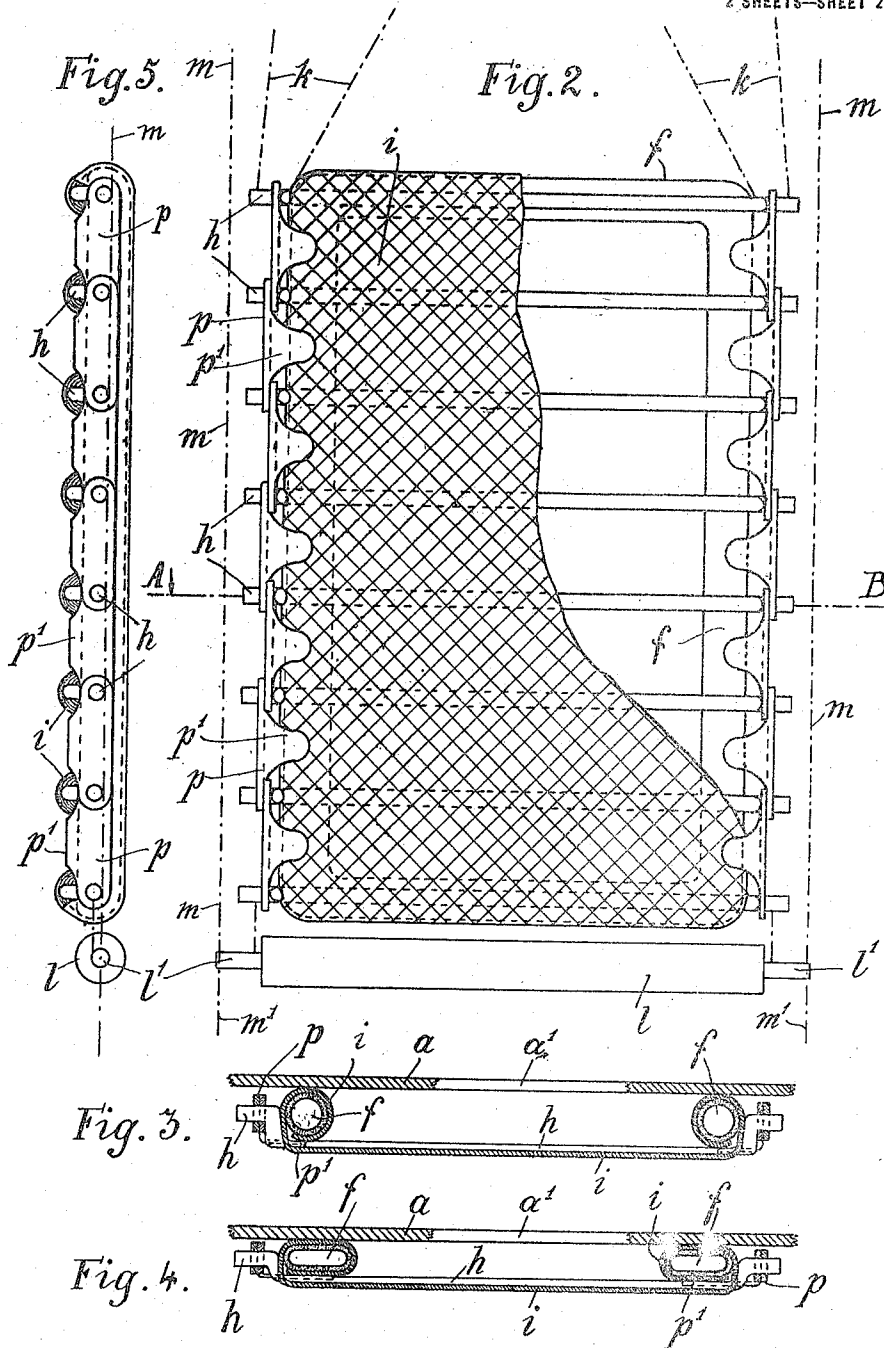
Inventors
Frederic Wullyamoz
Gustave Meyer
By *[Signature]*
their Attorneys.

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UNITED STATES PATENT OFFICE.

FRÉDÉRIC WULLYAMAZ AND GUSTAVE MEYER, OF LAUSANNE, SWITZERLAND.

LEAK-OBTURATING DEVICE FOR SHIPS.

1,221,496.

Specification of Letters Patent.

Patented Apr. 3, 1917.

Application filed September 19, 1916. Serial No. 120,966.

To all whom it may concern:

Be it known that we, FRÉDÉRIC WULLYAMAZ, doctor of medicine, and GUSTAVE MEYER, manufacturer, citizens of Switzerland, residing at Lausanne, Canton of Vaud, in the Confederation of Switzerland, have invented certain new and useful Improvements in Leak-Obturing Devices for Ships, of which the following is a specification.

The object of invention is the provision of a leak-obturing-device for ships which may be applied to any ship whatever for the purpose of rapidly obturing any leaks which may result from accident or other causes.

The device is based on the principle of applying to the leak a flexible curtain for example tarred cloth, caoutchouc or the like which extends over the hole producing the leak and is pressed against the sides of the ship by the pressure of the water in which the ship floats. This curtain is provided with suitable braces to prevent it from being pressed into the hole causing the leak, and also with a frame formed by a cushion having an air-chamber which may be filled with compressed air or gas, the said frame causing the joint of the curtain to be made tight all around the leak which is to be obtured. The device further comprises means for rapidly transporting the curtain to the point of the ship where the leak has been produced, as well as for applying the same to the leak.

In the drawing Figure 1 is a perspective view of one form of our invention. In this figure the cloth of which the curtain is formed is supposed to be transparent with the idea of having the structure more easily understood.

Fig. 2 is a front view of the curtain unfolded.

Fig. 3 is a section on the line A—B of Fig. 2, the tubular frame of the curtain being inflated.

Fig. 4 is a similar section in which the tubular frame is shown as flattened by being compressed by the water and

Fig. 5 is a side-view of the curtain in its unfolded condition.

In the construction shown in Fig. 1, *a* designates the hull of a ship in which a hole *a*¹ has been produced beneath the water-line *x—y*.

The hull *a* is fitted with two rails *b* and *c*

on which is mounted a carriage *d* provided with rollers *e*. This carriage supports an obturing-curtain having a frame *f* formed of a tubular air-chamber adapted to be inflated with compressed air or gas supplied from a tank *g* which has an inlet tap or valve *g*¹. Rigid bars *h* are employed to transmit to the said frame *f* the pressure of the water in which the ship is floated, and a cloth *i* of suitable material has its edges fixed to the frame *f* and is supported by the said bars *h*.

The thus constructed curtain may be rolled up on a roller *l* which is fixed to its lower end and which may be raised up to the carriage when the apparatus is out of use.

When the carriage *d* is placed on the rails *b, c*, the curtain may be moved in its rolled-up condition to a position above the place where the hull *a* has been punctured and has a leak. Then the curtain is rolled down and the pressure of the water forces the same against the hull of the ship by the action of the water in its tendency to rush into the hole in the hull. The frame *f* having been placed in a suitable position when the curtain is rolled down it will extend over and beyond the hole so that it forms a sort of plaster having its frame tightly applied on all sides of the leak.

The rolling down of the curtain may be facilitated by having suitable cables used to act upon its lower end as shown in the Figs. 7 to 13 of the drawings.

The upper end of the frame *f* is suspended to the carriage *d* by means of chains or cables *k* and its lower end is fixed to a roller *l*, the axis *l*² of which is suspended by suitable cables *m* which may be rolled up on a roller *n* as shown. On the other hand the axis *l*² may be connected to suitable chains or cables *m*¹ which pass around the ship-hull *a* as shown in Fig. 6 and which are intended to pull the lower end of the curtain downward when the said curtain is to be unrolled. *o* is an electric motor to which current is supplied by means of a cable *o*¹ and which may be employed to move the different parts of the hereinbefore described device. As shown in the drawing however, each of the said parts is manually operated, and Figs. 2 to 5 show clearly the construction of the device shown in perspective in Fig. 1.

In these figures the cloth of the curtain is shown by means of cross hatching. The

ends of the bars h are each bent in the form of a bayonet as shown in Figs. 3 and 4, and the said ends are connected to one another by means of links or members p each of which is provided with a pad p^1 intended to press the cloth against the air-chamber f .

The roller l on which the curtain is rolled up when the apparatus is not in use, is provided with an idle axis l^1 which is connected on the one hand to the cables or chains m by means of which the said roller l may be raised above the water-line, and on the other hand to the cables or chains m^1 which are adapted to roll down and to lower the curtain while being pressed against the hull a of the ship. Therefore the curtain forms a sort of flexible sluice between the ship-hull a and the water, whereby the said water presses the same against the hull and the frame f covers the leak a^1 .

The bars h of the described device may be combined with means for having the same magnetized so as to cause them to be attracted by the metallic parts of the ship-hull in order to cooperate with the pressure of the water for the application of the curtain in stopping a leak.

It is to be noted that the points at which the brace bars h pass through the cloth curtain i are exterior to points of contact between the pneumatic frame and the bars and curtain so that passing the bars through the curtain does not interfere with the obturating functions of the curtain.

We claim as our invention:

1. A leak stopper having a pneumatic

frame, an obturating curtain carried by said frame and adapted to be placed against a surface to be repaired, and braces for said curtain and frame.

2. A leak stopper having a pneumatic frame, an obturating curtain connected to said frame and adapted to be placed against a surface to be repaired, and brace bars extending between opposite sides of said frame for supporting the same and the said curtain.

3. A leak stopper comprising a pneumatic frame, an obturating curtain connected to said frame and adapted to be placed against a surface to be repaired, brace bars extending along the inner side of said curtain between opposite parts of the said frame and extending through apertures provided therefor in the curtain adjacent the pneumatic frame and terminating at opposite sides of the said pneumatic frame and exteriorly thereof, and pads between the said curtain and the adjacent portions of the pneumatic frame for causing those portions of the curtain intermediate of the brace bars and adjacent the pneumatic frame to press against the latter.

In testimony whereof we have affixed our signatures in presence of two witnesses.

FRÉDÉRIC WULLYAMOZ.
GUSTAVE MEYER.

Witnesses:

ROD. DE WURSTEMBERGER,
LOUIS H. MUNIER.

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