

(No Model.)

H. EULER.
SHALLOW WATER ALARM.

No. 482,550.

Patented Sept. 13, 1892.

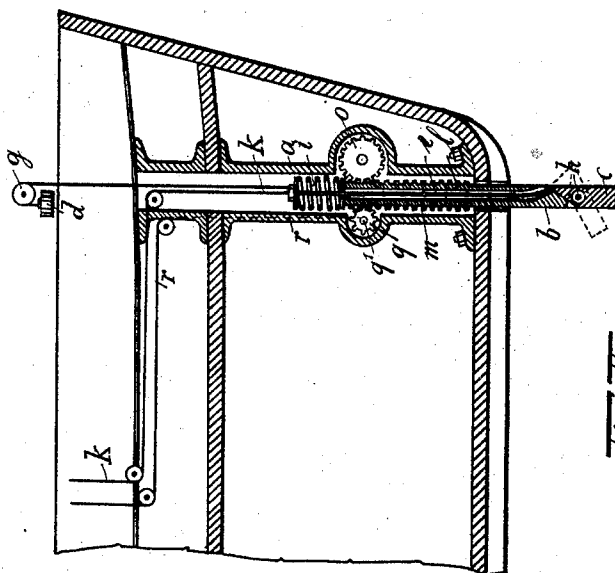


Fig. II.

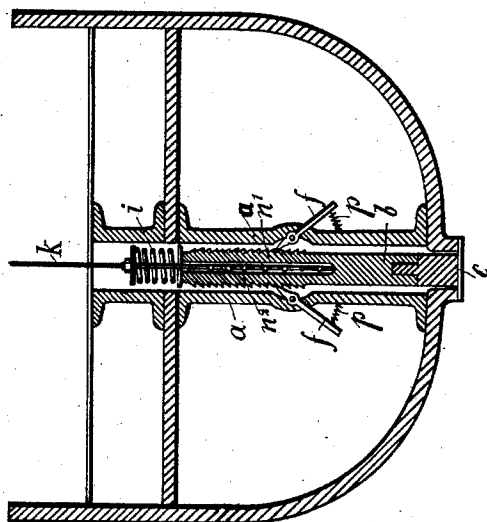


Fig. I.

WITNESSES:
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HANS EULER, OF LEHE, NEAR BREMERHAVEN, GERMANY.

SHALLOW-WATER ALARM.

SPECIFICATION forming part of Letters Patent No. 482,550, dated September 13, 1892.

Application filed June 3, 1892. Serial No. 435,400. (No model.) Patented in England October 30, 1891, No. 18,719, and in France November 2, 1891, No. 217,156.

To all whom it may concern:

Be it known that I, HANS EULER, a citizen of the Empire of Germany, residing at Lehe, near Bremerhaven, in the Empire of Germany, have invented certain new and useful Improvements in Sea-Sounding and Alarm Attachments for Vessels, (for which Letters Patent were granted to me in Great Britain, No. 18,719, dated October 30, 1891, and in France, No. 217,156, dated November 2, 1891,) of which the following is a specification.

This invention relates to an apparatus for use on board navigable vessels for indicating the depths of water when it is becoming dangerously shallow.

According to this invention a signal is given twice, each signal being independent of the other—that is to say, the first time when the keel of the vessel is only at a short distance from the bottom or rock or other similar impediment, and the second time when this distance has become less or when the vessel is in danger of grounding.

The indicator apparatus is represented in the adjoining drawings, in Figure I by a section through the vessel in the center of the sounding-indicator, and in Fig. II in longitudinal section. The apparatus is shown in action in Fig. II and out of action in Fig. I.

Similar letters of reference indicate corresponding parts.

Near the stem of the vessel and reaching to the lowest part thereof there is provided a tube *a*, and placed vertically in this tube there is a rod *b*, to which is attached a chain *e*, which passes over the pulley *g* above and bearing a counter-weight *d*, which has for its object, first, to hold the rod *b* in equilibrium, and, secondly, to indicate the height at which the rod stands. The rod *b* extends through the keel or bottom of the vessel and is cut off obliquely at the lower extremity. *c* is a lever, being a prolongation of the rod *b*, and hinged thereto at *h*, and cut off slantingly to correspond to the angle of the end of the rod. *e* is a chain passing through a longitudinal perforation in the rod *b*, the said chain being in connection with a spiral spring *i* above, the object of which is to hold the lever *c* in a vertical position. *k* is a rope leading from the

chain *e* to a signal arrangement on the ship—for instance, the steam-whistle.

The rod *b* is provided with four toothed racks *l*, *m*, *n'*, and *n''*. The front toothed rack gears with a toothed wheel *o*, which can be thrown in and out of gear, and provides for setting the rod *b* at any desired height from the ship's bottom. Two catch-pawls are provided on the tube *a*, which take into the toothed racks *n'* and *n''*, the teeth of which are cut with a downward slant, the pawls being provided with springs *p*, arranged for coupling and uncoupling, so as to hold the rod *b* fixed at any height and prevent it from falling downward. The back toothed rack *m* gears into a small toothed wheel *q*, from the shaft of which *q'* a cord *r* leads to a second signal apparatus or steam-whistle on the ship.

The operation of the apparatus is as follows: When the vessel runs in danger of touching the ground, the lowest point—that is to say, the end of the lever *c*—naturally first touches the bottom. Corresponding to the movement of the vessel, the lever takes the position shown in dotted lines, thereby pulling the chain *e* and actuating the steam-whistle by the rope *k*. Should this warning-whistle not be attended to by stopping or backing and the vessel continue its course, getting into still more shallow water, then by the concussion the whole of the apparatus is pressed upward, whereby the toothed rack *m* of the rod *b* turns the toothed wheel *q*, together with the attached cord *r*, and sets the second signal apparatus—that is, the steam-whistle—in action.

It is self-evident that the giving of the warning-signal can also be effected by electric contact. Arrangements for this purpose are well known to experts in the matter without further description.

When the contrivance is not in use, it is raised by means of the front toothed rack and toothed wheel *o*, Fig. I, and the hole at the bottom is closed by means of a valve.

It is advisable when dealing with vessels in shallow water to provide a space in the length of the keel or bottom for the reception of the lever *c*. The advantages of the apparatus consist in the possibility of having under all circumstances a safe double-warning signal

of the existence of shallows which can be regulated, as desired, by placing the apparatus at a lesser or greater depth.

Having thus described my invention, I
5 claim as new and desire to secure by Letters Patent—

1. A ship's appliance for automatically signaling when banks or shallow water are encountered, comprising a movable rod passing
10 through the ship's bottom, an articulated member on the lower end of said rod, a spring for holding said member in line with the rod, and a signaling device connected with said articulated member, all combined substan-
15 tially as set forth.

2. A ship's appliance for automatically signaling when banks or shallow water are encountered, comprising a movable rod passing through the ship's bottom, an articulated
20 member on the lower end of said rod, a signaling device connected with said member, a rack formed on the rod, a pinion engaging said rack, and a second signaling device connected with said pinion, all combined sub-
25 stantially as herein shown and described.

3. A ship's appliance for automatically signaling when banks or shallow water are en-

countered, comprising a movable rod passing through the ship's bottom, an articulated member on the lower end of said rod, a spring
30 connected with said rod, a flexible connection between the spring and the said member, a signaling device connected with the spring, and a counterbalancing device connected with the spring, all combined substantially as
35 herein shown and described.

4. A ship's appliance for automatically signaling when banks or shallow water are encountered, comprising a movable rod passing through the ship's bottom, an articulated
40 member on the lower end of said rod, a signaling device connected with said member, and a second and independent signaling device and means for operating the same from said rod, substantially as herein shown and
45 described.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

HANS EULER.

Witnesses:

PAUL GOEPEL,
CHARLES SCHROEDER.