(No Model.)

J. & G. H. BLISS.

ROTATOR FOR SHIPS' LOGS.

No. 331,369. Patented Dec. 1, 1885.

Fig. 1.

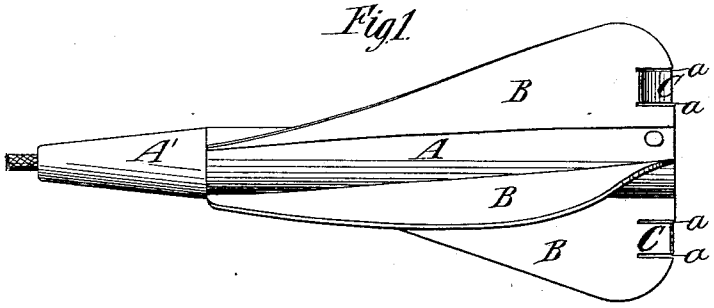


Fig. 2.

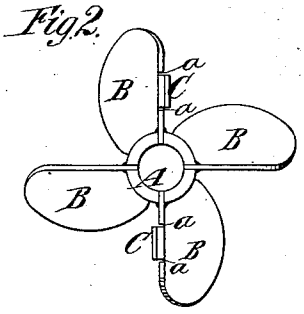


Fig. 3.

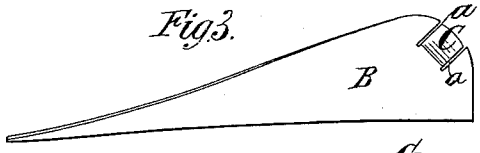


Fig. 4.

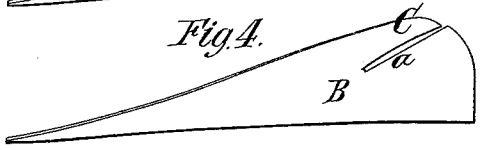


Fig. 5.



Fig. 6.

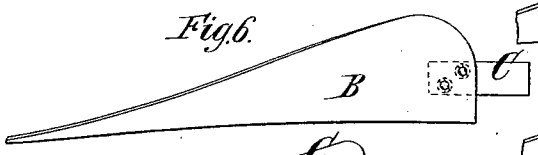


Fig. 7.

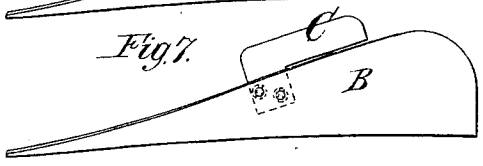


Fig. 8.

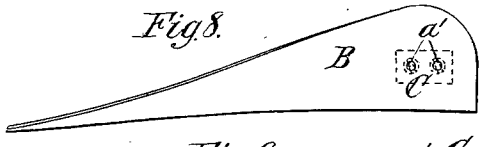


Fig. 9.

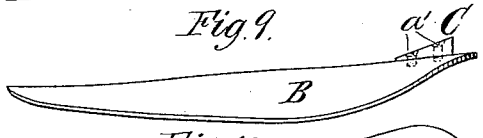


Fig. 10.

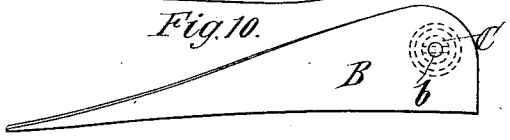


Fig. 12.

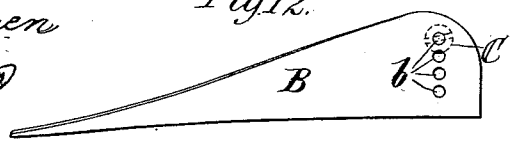


Fig. 13.

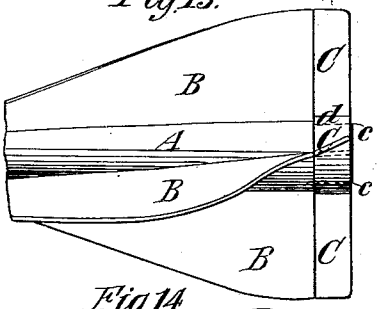


Fig. 14.

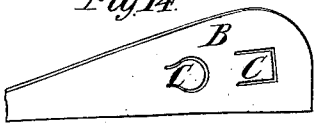


Fig. 15.

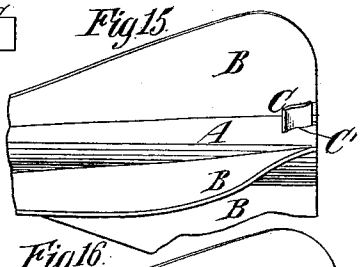


Fig. 16.

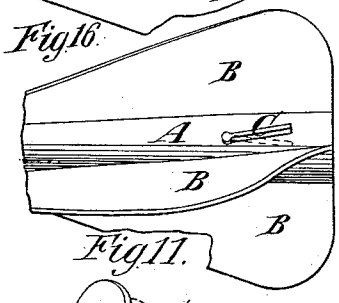
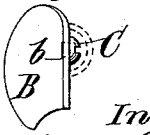


Fig. 11.



Witnesses:
C. L. Sundgren
Emil Heller

Inventor:
John Bliss
Geo. H. Bliss
by their Attys
Brown & Hall

N. PETERS. Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

JOHN BLISS AND GEORGE H. BLISS, OF BROOKLYN, NEW YORK.

ROTATOR FOR SHIPS' LOGS.

SPECIFICATION forming part of Letters Patent No. 331,369, dated December 1, 1885.

Application filed July 23, 1885. Serial No. 172,409. (No model.)

To all whom it may concern:

Be it known that we, JOHN BLISS and GEORGE H. BLISS, both of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Rotators for Ships' Logs, of which the following is a specification.

Our invention relates to rotators having spiral or helicoidal or flat oblique blades which impart a rotary motion to the rotator as it is drawn through the water, and although the invention is more particularly intended for taffrail-logs in which the registering mechanism on the vessel is connected by a line or wire with the distant rotator in the water, it may be embodied in submerged logs in which the rotator and registering mechanism are permanently connected and are thrown overboard together. It is of course necessary to the usefulness of the log that it should register accurately, and any undue increase in the speed of rotation of the rotator will cause the log to over register, while if the speed of the rotator is less than the normal speed for the distance traveled the log will under register. By careful experiment it is found that the same or a standard rotator will give different speeds when used under different circumstances and on different vessels, and hence the importance of providing on the rotator simple and easily-adjustable devices, or means whereby the shipmaster may regulate the rotator so that it will register accurately and preserve its accuracy so long as it is used upon the same vessel, and otherwise under the same existing conditions.

We are aware that the blades of a propeller have been made adjustable to vary the pitch; but such an adjustment would not be well adapted for a log-rotator, because it has usually a considerable length relatively to its diameter, and because it is desirable that its main blades should be fixed and non-adjustable to secure simplicity, cheapness, and strength of construction.

The object of our invention is to provide, in connection with a log-rotator, very simple means for regulating the speed of rotation of the rotator, which may be readily adjusted by the navigator, and which, when adjusted, will accurately maintain a uniform speed of the rotator. This result we may secure by providing one or more of the blades of the rotator with adjustable regulators. These regulators may be made in various ways. We may, for example, slit one or more of the blades, which are ordinarily made of thin plate metal, and so as to form on each blade a supplemental wing or fin, which may be deflected or bent more or less than the fixed blade, to increase or diminish the effect of the pitch of that blade; or we may secure a like result by riveting or otherwise attaching to the fixed blade a small supplemental wing or fin, which may be deflected or bent in like manner and for a like purpose. The same result may also be secured by attaching pieces of different sizes to one or more fixed blades, or by attaching such pieces to the blade or blades at different distances from the center of the rotator. We may also secure the desired result by providing at the rear end of the rotator a supplemental rotator or fan having wings or fins, which may be bent relatively to the fixed blades, or by providing a number of interchangeable supplemental rotators having wings or fins of different pitches, or by providing a supplemental and adjustable wing or fin on the body of the rotator.

In all cases our improved regulating devices are capable of adjustment without shifting the main blades.

In the accompanying drawings, Figure 1 is a side view of a rotator having blades slitted or cut to form supplemental wings or fins. Fig. 2 is an end view thereof. Figs. 3 and 4 represent side views of blades having supplemental wings or fins differentially formed. Fig. 5 is an edge view of the blade shown in Fig. 4. Figs. 6 and 7 represent blades having supplemental wings or fins formed by separate pieces attached to them. Fig. 8 is a side view, and Fig. 9 an edge view, of a blade having a wedge-shaped or inclined block detachably secured thereto. Figs. 10 and 11 are respectively a side view and an end view of a blade having a projection formed thereon by a screw inserted thereinto, the effect of varying the speed of the rotator being secured by changing the screw for one having a larger or smaller head. Fig. 12 represents a blade in which the same effect is secured by placing the screw in any one of a series of holes which

are at different distances from the center of the rotator. Fig. 13 represents a portion of a rotator having fixed blades, and provided with an attachment having supplemental wings or fins; and Figs. 14, 15, and 16 show portions of a rotator embodying modifications of our invention.

Similar letters of reference designate corresponding parts in all the figures.

A designates the center or body of the rotator, which is or may be cylindric throughout the principal portion of its length, and has a forwardly-tapering end portion, A′. To the center or body A A′ are securely fixed spiral or helicoidal or flat oblique blades B, here shown as four in number, and which are or may be made of sheet-brass or other sheet or plate metal, the body also being usually made of brass to prevent corrosion thereof. The blades B are carefully formed or shaped by means of suitable dies and formers, and are intended to all have the same pitch, which is to be fixed and invariable.

The means for regulating the speed of rotation are supplemental to the fixed blades themselves, and are adjustable relatively to the fixed blades without altering the pitch of the fixed or main blades or otherwise shifting them. The regulation or adjustment may be secured, as shown in Figs. 1 and 2, by slitting the blade B from its end inward, as at *a*, so as to form a supplemental wing or fin, C, which may be bent or deflected in either direction, so as to increase or diminish the effect of the spiral arrangement of the blades. We have here shown two opposite blades as provided with supplemental wings or fins C, but may provide one or more of the blades with such wings or fins.

In Fig. 3 we have shown a blade, B, having the supplemental wing or fin C formed by slitting the blade diagonally inward at *a* from the outer rear corner or curve thereof, and in Figs. 4 and 5 we have shown a blade having a supplemental wing or fin, C, formed by slitting the blade once, as at *a*.

In Fig. 6 we have shown a blade, B, having a supplemental wing or fin, C, formed by riveting or otherwise securing to the blade a piece of metal which projects rearward therefrom and may be bent or deflected relatively to the blade.

In Fig. 7 the same result is secured by riveting or otherwise attaching to the blade B a supplemental wing or fin, C, which projects beyond the outer edge thereof, and may be bent or deflected relatively thereto.

In Figs. 8 and 9 we have represented a blade, B, having attached to the face thereof, by screws *a′* or otherwise, a wedge-shaped or inclined block or projection, C, which increases the effect of the spiral arrangement of the blades. This block may be removed and replaced by one of larger or smaller size, or by one having a different degree of inclination.

In Figs. 10 and 11 we have represented a blade, B, having a single hole, *b*, to receive a screw having a large head, C. By removing this screw and substituting a screw having a larger or smaller head, as indicated by dotted lines in Figs. 10 and 11, the effect of the spiral arrangement of the blades may be increased or diminished.

The same result may be secured by providing in the blade B a number of holes, *b*, at different distances from its inner edge or from the center of the rotator, as is shown in Fig. 12, and the effect of the spiral arrangement of the blades may then be varied by placing the screw C in one or other of these holes, or by inserting a screw or screws in one or more of the holes *b*.

In Fig. 13 the body A of the rotator has at the rear end a neck or projection, *c*, of smaller diameter, on which is placed a hub or collar, *d*, from which project spiral wings or regulating-fins C. These wings or fins may have a greater pitch than the fixed blades, as shown, or a less pitch than said blades. Several such attachments, having wings or fins of different pitch, may be provided and made interchangeable on the rotator, or a single one may be provided having wings or fins which may be bent more or less relatively to the fixed blades to secure the desired object.

In the example of our invention shown in Fig. 14, the blade B has a supplemental wing or fin, C, cut from it within its edge, and bent or deflected relatively to it, as before described.

In Fig. 15 we have represented a portion of a rotator having the body A slitted to receive a cross-piece, C′, the ends of which project beyond the body and form supplemental wings or fins C, which may be bent or deflected relatively to the fixed blades B.

In Fig. 16 we have represented the body A as having upon its exterior a supplemental wing or fin, C, which is fixed to the body at any point in its length, and may be bent or turned, as represented by dotted lines relatively to the fixed blades.

In all the examples of our invention the effect of the spiral arrangement of the main blades is increased or diminished by the adjustable regulators, which are on the blades or employed in connection with the blades, and in all cases the regulators may be adjusted without shifting the main blades.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The combination, with a log-rotator, of a regulator in connection with one or more of the blades, capable of adjustment without shifting the blades, whereby the speed of rotation may be increased or diminished, substantially as herein described.

2. The combination, with the log-rotator, of a regulator or regulators applied to one or more of the blades, and capable of adjustment without shifting the blades, for the purpose of increasing or diminishing the speed of rotation, substantially as herein described.

3. The combination, with a log-rotator, of supplemental wings or fins on one or more of the blades, to be deflected or bent relatively to the blade or blades in order to increase or diminish the speed of rotation of the rotator, substantially as herein described.

4. The log-rotator herein described, having one or more of its blades slitted to form a supplemental wing or fin, C, which may be bent or deflected relatively to the blade, substantially as herein described.

JOHN BLISS.
GEO. H. BLISS.

Witnesses:
CYRUS E. STAPLER.
WALTER NICHOL.

Correction in Letters Patent No. 331,369.

It is hereby certified that in Letters Patent 331,369, granted December 1, 1885, upon the application of John Bliss and George H. Bliss, of Brooklyn, New York, for an improvement in "Rotators for Ships' Logs," an error appears in the printed specification requiring correction as follows: In line 87, page 1, the word "differentially" should be stricken out and the word *differently* inserted instead; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed, countersigned, and sealed this 8th day of December, A. D. 1885.

[SEAL.]

H. L. MULDROW,
Acting Secretary of the Interior.

Countersigned:

M. V. MONTGOMERY,
Commissioner of Patents.