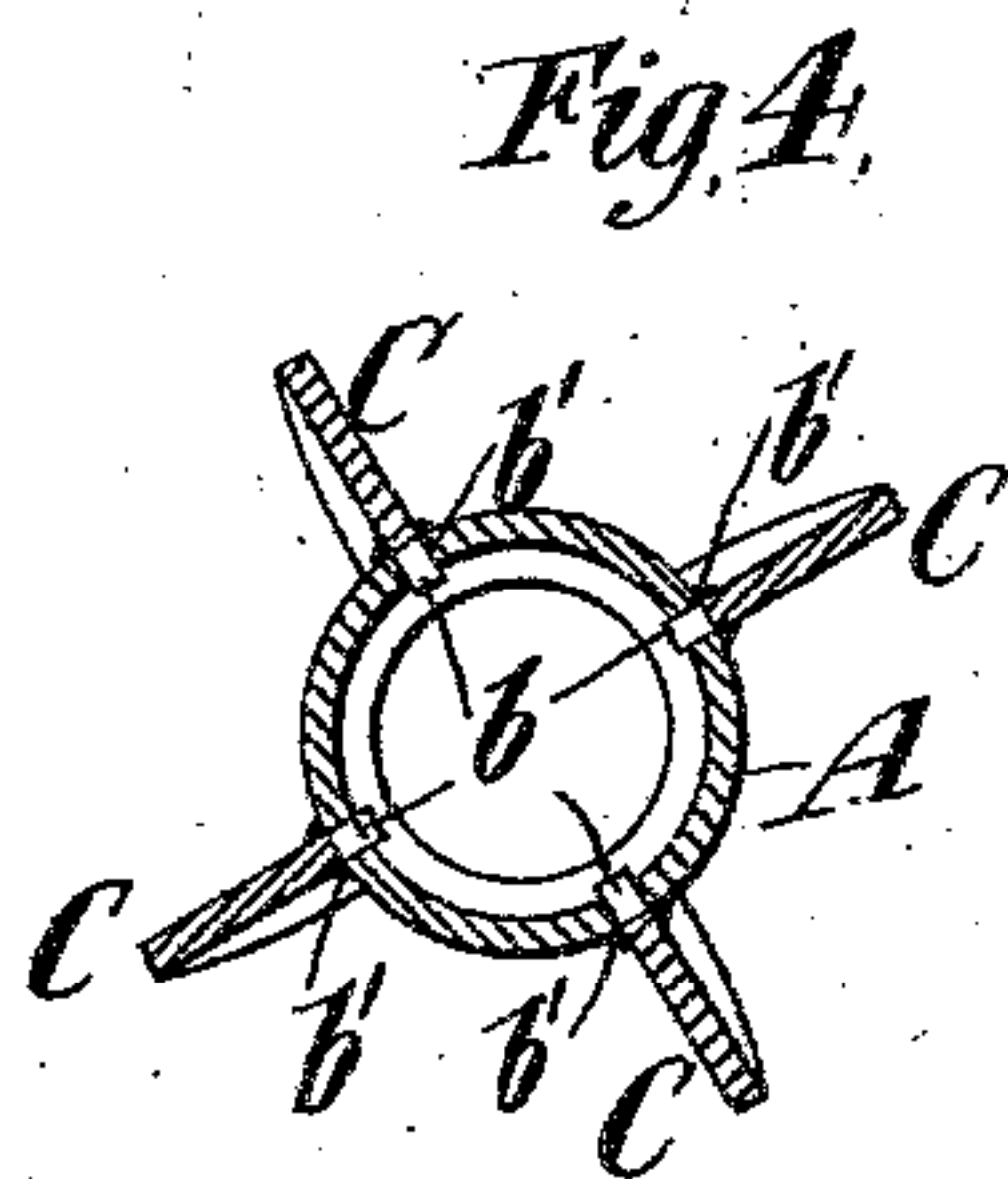
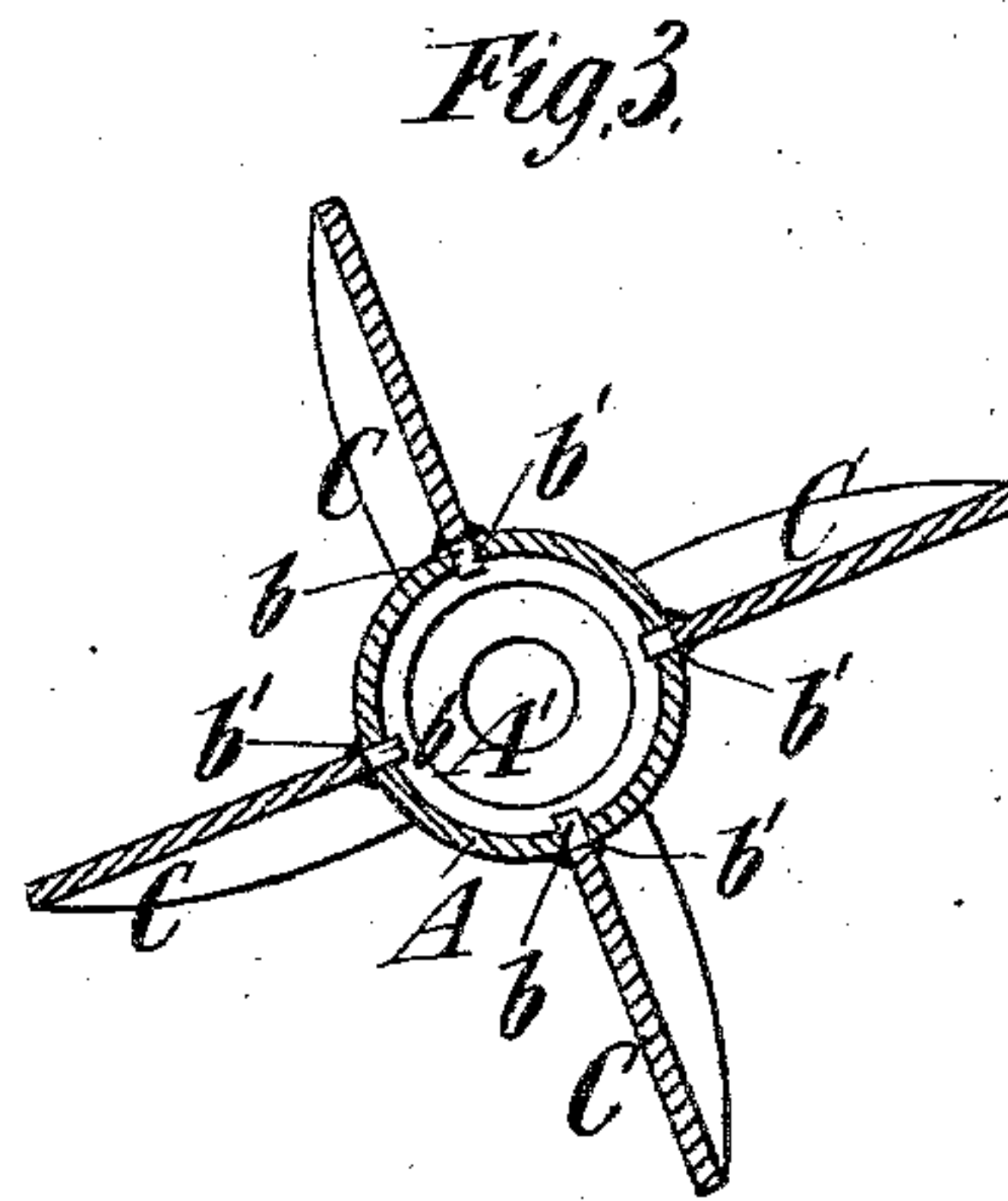
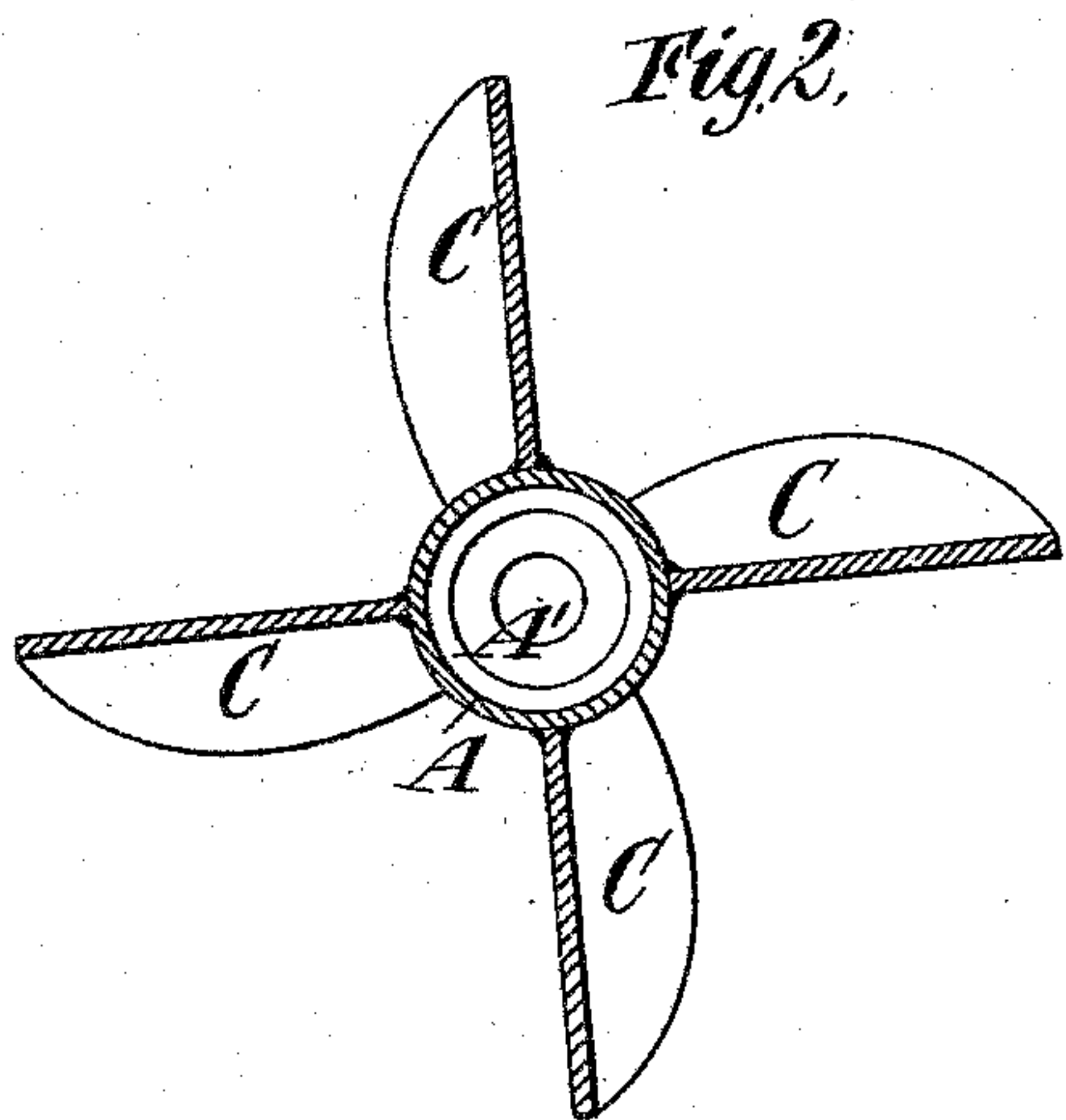
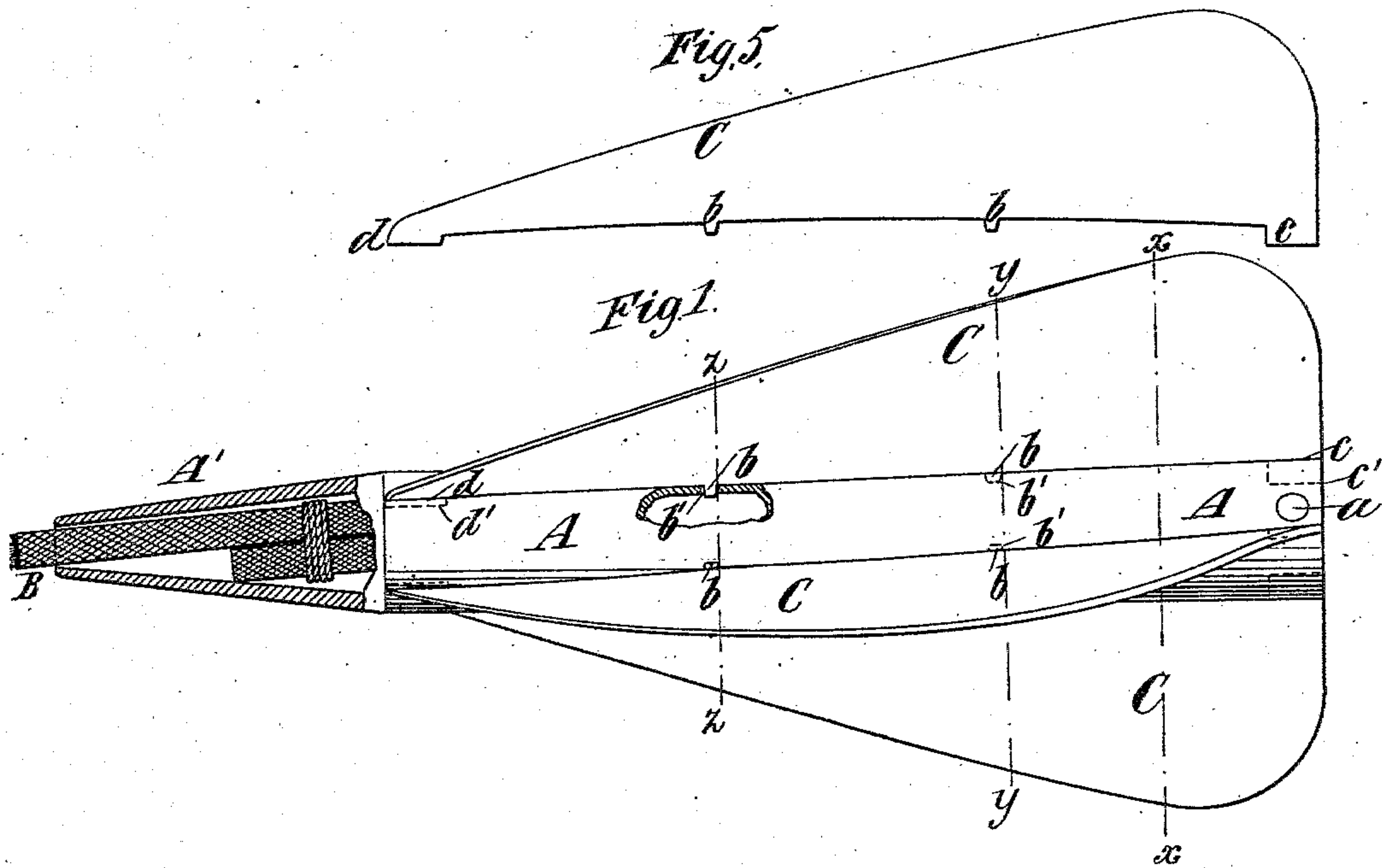


(No Model.)

J. & G. H. BLISS.  
ROTATOR FOR SHIPS' LOGS.

No. 296,385.

Patented Apr. 8, 1884.



Witnesses:  
*John H. Hays*  
*Matthew Pollock*

Inventors:  
*John Bliss*  
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*Brown & Hall*



# 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. 296,385, dated April 8, 1884.

Application filed February 18, 1884. (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  
5 a new and useful Improvement in Rotators for Ships' Logs, of which the following is a specification.

Our invention relates particularly to rotators for what are commonly known as "taff-rail-logs," which consist, essentially, of a rota-  
10 tor which is to be drawn through the water, and which transmits its rotation, through a braided line or other suitable connection, to a register or recording apparatus carried upon  
15 the vessel. In order that logs of this class may be reliable, it is of course of primary importance that the number of turns of the rotator produced by the passage of the vessel a given distance shall be as nearly invariable as  
20 possible; and the object of our present invention is to provide for making the rotators uniform in all respects, and thus to increase the reliability of taffrail-logs.

The invention consists in a rotator having  
25 an approximately cylindric body with a tapering forward end, and having spiral wings or blades which taper from their rear ends forward and form helicoidal surfaces radial throughout their length to the longitudinal  
30 center or axis of the body.

The invention also consists in a rotator having an approximately cylindric body with a tapering forward end, and having spiral wings  
35 or blades which have a gradual taper from the place of largest diameter to the forwardly-tapering end of the body, the tapering end of the body being an approximate continuation of the taper of the blades, and which form  
40 helicoidal surfaces radial throughout their length to the longitudinal center or axis of the body.

The invention also consists in novel features, hereinafter described, in the construction of  
45 the rotator body and wings or blades, and in the manner of combining them together, whereby the spiral or helicoidal wings or blades are held in proper position on the rotator-body during the operation of soldering them  
50 thereto, and are so braced and strengthened that they are less liable than heretofore to become detached from the body by use.

In the accompanying drawings, Figure 1 is a partly-sectional side view of a rotator embodying our invention. Figs. 2, 3, and 4 are  
55 transverse sections thereof, taken on the planes of the dotted lines *x x*, *y y*, *z z*, Fig. 1; and Fig. 5 is a blank of one of the wings or blades.

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

A designates the rotator-body, which is truly  
60 or approximately cylindric, and has a forwardly-tapering end portion, A', through which the line B is passed. The line B may be held within the tubular body in any suitable manner. We prefer to fold or double the line  
65 upon itself and to serve the double portion around with cord, and a pin or screw is then passed through a hole, *a*, transversely across the body A at its rear end and through the  
70 loop thus formed in the line.

The rotator here shown has four spiral wings or blades, C, which are secured by sol-  
75 der or otherwise to the body A, and which have a gradual taper from the place of greatest diameter to the forwardly-tapering end of the body, the taper of the portion A' of the  
80 body forming an approximate continuation of the taper of the wings or blades. These wings or blades form true helicoidal surfaces, which are radial throughout to the longitudinal cen-  
85 ter or axis of the body. At its inner edge and between its ends the blade C has one, two, or more teats or projections, *b*, which enter a hole or holes, *b'*, formed in the body A, along the  
90 spiral line on which the blade is to be attached, and, as here shown, the blade has at its rear end a tongue, *c*, which enters a notch or groove, *c'*, at the rear end of the body A, and at its  
95 forward end a smaller tongue, *d*, which enters a groove or slot, *d'*, in the body A.

In forming the wings or blades C, we first  
cut or punch from sheet metal, preferably  
brass, blanks of the form shown in Fig. 5, and  
then, by means of a suitable die or former, we  
press or stamp them into the desired helicoidal  
95 form. In this way the wings or blades will have a uniform twist imparted to them.

In attaching the wings or blades to the body A, the wing or blade is laid thereon, the tongues  
100 *c d* entering the slots or notches *c' d'* and the teats *b* entering the holes *b'*, and the blade is then soldered to the body at each side and



along its whole length. After the operation of soldering is completed a gage is passed along the body from end to end, and if the blades are not truly radial to the longitudinal center or axis of the rotator they are tapped slightly with a mallet to bring them to such position. The one or more teats or projections *b*, entering the holes *b'*, hold the blade in alignment while being soldered, and so strengthen and brace the connection between the blades and body that the blades are not as liable to become detached or distorted as when no teats or projections *b* and holes *b'* are used.

By long-continued and careful experiment we have discovered that it is important not only that the blades should have a gradual forward taper, but that they should form helicoidal surfaces which are radial throughout their length to the longitudinal center or axis of the body. We are aware that it is not new to make the wing or blade of a log-rotator with a gradual forward taper from the place of greatest diameter, as such a rotator is shown and described in our Letters Patent No. 208,061, dated September 17, 1878; but we are not aware that prior to our invention a rotator had ever been made in which the forwardly-tapering blades constituted true helicoidal surfaces radial throughout their length to the longitudinal center or axis of the body.

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

1. A rotator for ships' logs, having an ap-

proximately cylindric body with a tapering forward end, and having spiral wings or blades which taper from their rear ends forward and form helicoidal surfaces radial throughout their length to the longitudinal center or axis of the body, substantially as herein described.

2. A rotator for ships' logs, having an approximately cylindric body with a forwardly-tapering end, and having spiral wings or blades which have a gradual taper from the place of largest diameter to the forwardly-tapering end, the taper of said end forming an approximate continuation of the taper of said wings or blades, and which form helicoidal surfaces radial throughout their length to the longitudinal center or axis of the body, substantially as herein described.

3. The combination, with the rotator-body A, of the wings or blades C, provided between their ends with teats or projections *b*, which enter holes *b'* in the body, and maintain the said wings or blades in spiral alignment on the body, substantially as herein described.

4. The combination, with the rotator-body A, of the wings or blades C, provided with tongues *c d*, and projections *b*, entering slots and holes *c' d' b'* in said body, and serving to preserve the spiral alignment of the said wings or blades, substantially as herein described.

JOHN BLISS.

GEORGE H. BLISS.

Witnesses:

S. C. BURGESS,

C. HALL.