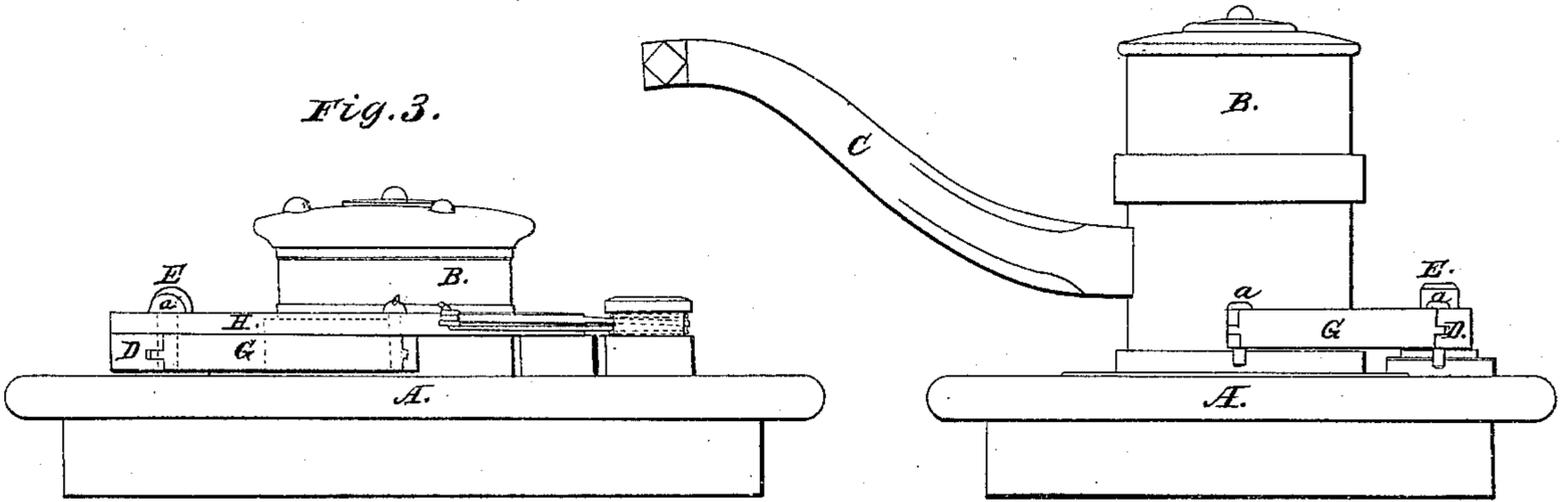


*B. F. Delano.*  
*Steering.*

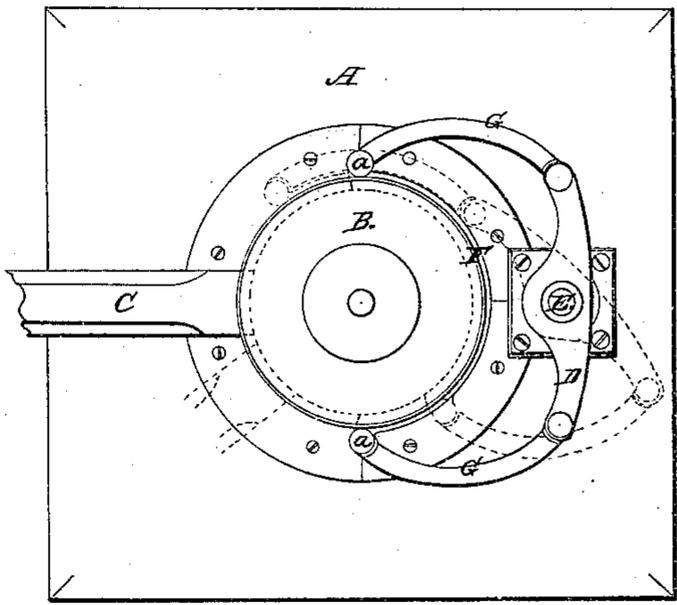
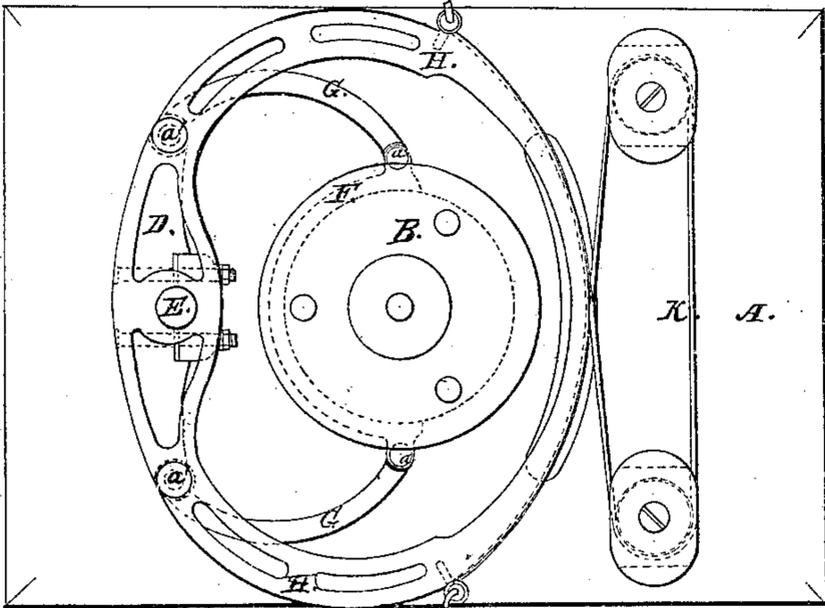
*N<sup>o</sup> 9,936.*

*Patented Aug. 16, 1853.*  
*Fig. 1.*

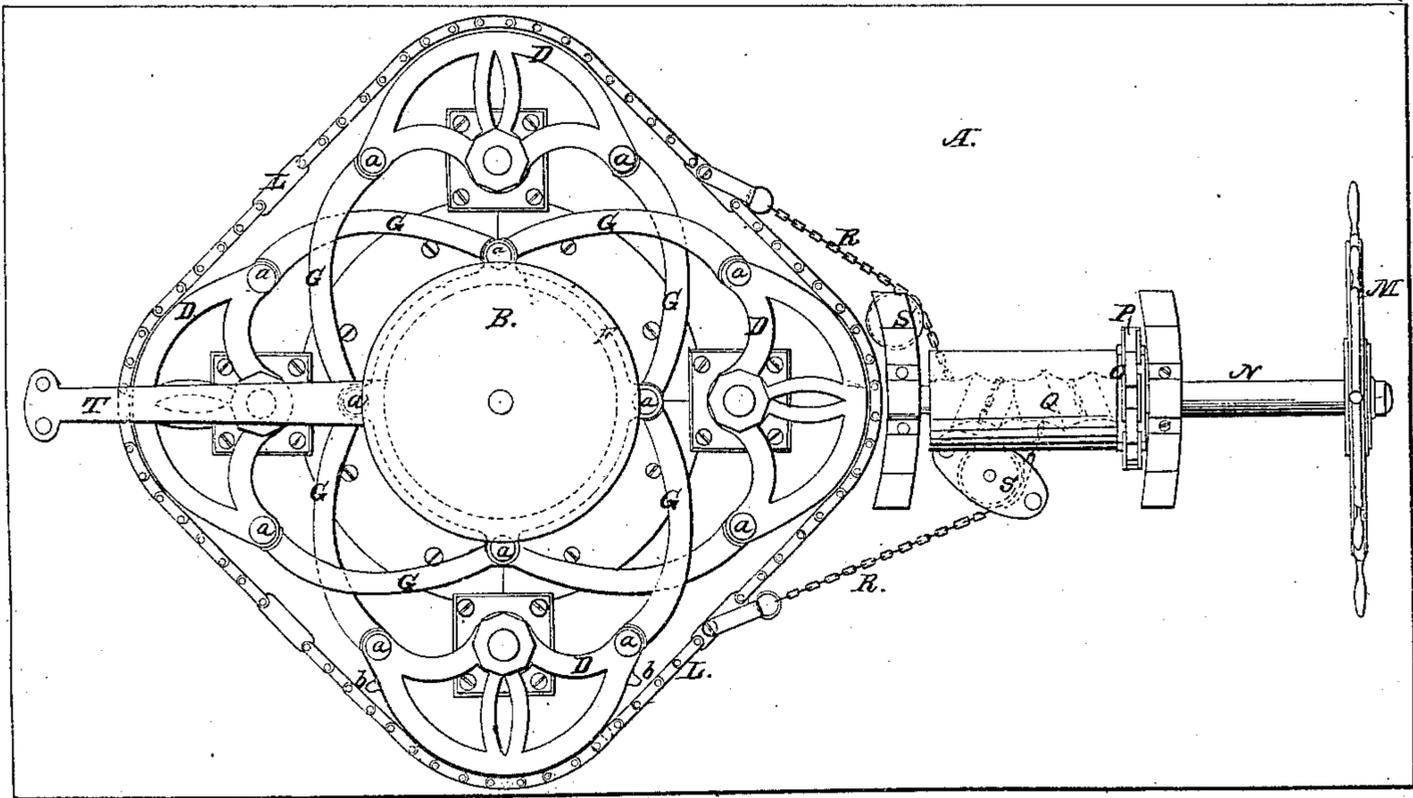


*Fig. 4.*

*Fig. 2.*



*Fig. 5.*



# UNITED STATES PATENT OFFICE.

BENJAMIN F. DELANO, OF CHELSEA, MASSACHUSETTS.

## RUDDER-BRACE.

Specification of Letters Patent No. 9,936, dated August 16, 1853.

*To all whom it may concern:*

Be it known that I, B. F. DELANO, of Chelsea, in the county of Suffolk and State of Massachusetts, have invented a new and valuable Attachment to Rudders for Ships and other Vessels, which I call a "Rudder-Brace," the object and importance of which will be understood from the description of the same which follows.

10 In constructing the rudder of sailing and steam vessels, and particularly those of the larger class, great care is necessary in the selection of timber, and in the seasoning and after preparation of the same. On this account when commencing the building of a ship, the timber for the rudder stock is generally the first selected, that it may have time to become thoroughly seasoned before the rudder is required to be hung. Notwithstanding all the care however that can be practised, it frequently occurs that the timber has become so twisted and warped in drying, that when it is finally hung in place, the rudder does not turn truly upon its axis, and it often happens also, though the rudder may turn truly upon its center when first hung, that constant exposure to heat and cold, wet and dry, will cause the stock to warp, even after the rudder has been hung and accurately adjusted in its place; in consequence of which, great friction and strain is thrown upon the deck of the vessel at the point through which the rudder head passes, causing the latter to bind, and requiring considerable force to move it, and also producing that disagreeable and annoying noise so familiar to whoever has made a sea voyage in the after cabin. If now we attempt to remedy the evil by enlarging the hole in the deck through which the rudder head passes, another serious evil is encountered, not less annoying to the passengers or detrimental to the proper working of the rudder—viz, the rudder head is thrown from side to side of the opening by each wave that strikes it, while it is kept in a constant tremor by the eddy in which it plays, and an uninterrupted hammering or pounding is the result, which in its injurious effects upon the deck of the vessel is perhaps a more serious evil than even the straining of the stock in its bearings. To remedy these evils has long been a desideratum in ship building. I have succeeded by the means which I shall now describe in entirely doing away with them, at the same time that much less power is re-

quired to move the rudder, and the latter is more securely braced in its position.

The nature of my invention consists in the application to the rudder head of a lever or brace which is permitted to turn freely upon a pintle or center projecting from the deck of the vessel, which lever is suitably connected to the rudder head by arms with flexible or hinge joints, by which means the rudder stock is caused to turn freely, in the opening in the deck through which it passes, which opening may then be made sufficiently large for the purpose, and thus the friction, straining and noise are avoided, and the rudder receives an additional support, rendering it more secure and safe in its position.

To enable others skilled in the art, to understand and make use of my invention I will proceed to describe its construction and operation, reference being had to the annexed drawings making part of this specification, and in which—

Figure 1 is an elevation of a rudder head with my improvement attached. Fig. 2 is a plan of the same. Fig. 3 is an elevation of a modification of my improvement, in which the power which turns the rudder is applied directly to the "brace" itself. Fig. 4 is a plan of the same. Fig. 5 is a modification of my improvement which I propose sometimes to adopt, and in which braces are applied to all four sides of the rudder head, the power from the wheel being communicated by means of chains or otherwise to the "braces" themselves.

A, is the deck of the vessel; B the rudder head; C, the tiller.

D, is a lever vibrating upon the pintle E projecting from the deck of the vessel, to which it is secured in any well known and appropriate manner.

F is a metallic ring or portion of a ring, secured to the rudder head near to the deck of the vessel.

G are metallic arms connected with the metallic ring F, and the vibrating lever D by the flexible hinge-joints *a*.

It will now be perceived that the rudder post will be guided and directed in its revolutions by the brace D revolving upon its pintle E, and all friction and wear between the rudder post and the hole in the deck of the vessel through which it passes, is avoided, while the latter may be enlarged to any extent desired, without fear of producing

the hammering or pounding before mentioned. The dotted lines in Fig. 2 show the position assumed by the brace and its connections when the helm is hard down.

5 In Figs. 3 and 4 the ordinary tiller is replaced, by an elliptical metallic tiller H which is secured to the brace D at the points  $a'$ , or in any other appropriate manner, and by this means the power which moves  
10 the rudder is communicated through the brace D and its connecting arms G to the rudder head, the elliptical tiller being moved by means of ropes or chains K, by the ordinary wheel, or by any other known  
15 or appropriate manner.

In Fig. 5 is seen a modification of my invention which I propose sometimes to adopt. D are four braces upon the four opposite sides of the rudder head which differ slightly  
20 in form from those described above and are connected as before with the rudder head by the arms G hinged at the points  $a, a$ , to the metallic ring F. Upon the exterior periphery of these braces are teeth  $b, b$ , which mesh  
25 into the links of a messenger chain L, by which means any motion communicated to the chain is transmitted to the braces and through them to the rudder. M is an ordinary steering wheel, upon the shaft N of  
30 which is a wheel O, from which through

the messenger chain P motion is communicated to the double screw-formed barrel or shaft Q which runs in suitable bearings immediately above the deck of the vessel. The chains R after passing once or more around  
35 the barrel Q and over the guide pulleys S are attached to the chains L, and thus the motion of the wheel is transmitted through the above connections to the rudder. T is an ordinary tiller which may be resorted to  
40 in case of accident or any emergency whatever.

Having thus fully described my invention, what I claim as new and which I desire to secure by Letters Patent is—

1. The brace D connected with the rudder, substantially as described and operating in the manner set forth.

2. I claim the combination of the brace D with the elliptical tiller H or any other  
50 analogous device, for the purpose of actuating the rudder by the application of power to the braces instead of to the rudder itself.

In testimony whereof I have hereunto set my signature this eighteenth day of March,  
55 A. D. 1853.

BENJA. F. DELANO.

Witnesses:

S. W. COOK,  
FOSTER WATERMAN.