(No Model.)

J. N. LONG & J. McCAFFREY.

BEARING AND SUPPORT OF RUDDER STOCKS UPON VESSELS.

No. 381,148. Patented Apr. 17, 1888.

Fig. 1.

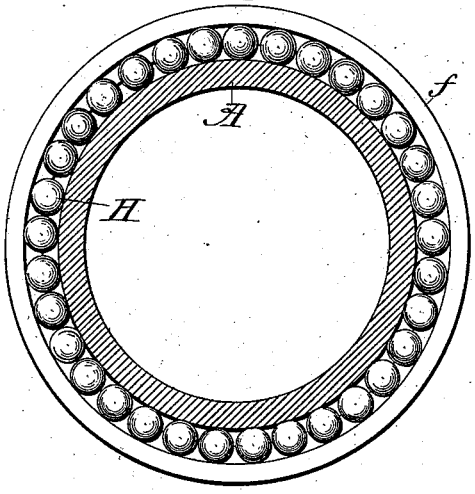


Fig. 2.

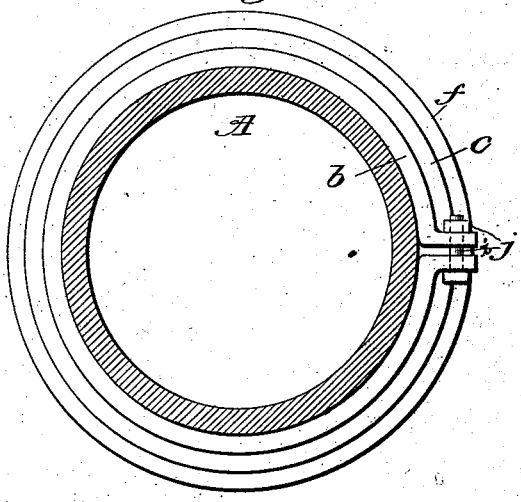


Fig. 4.

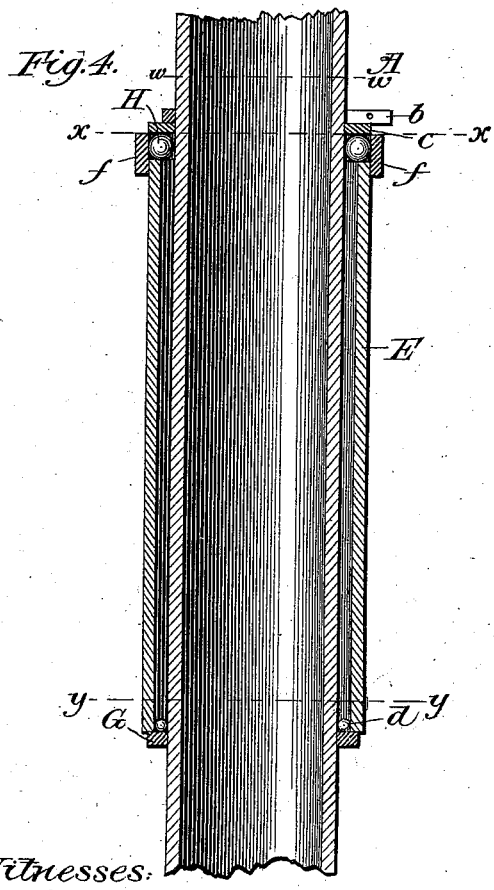
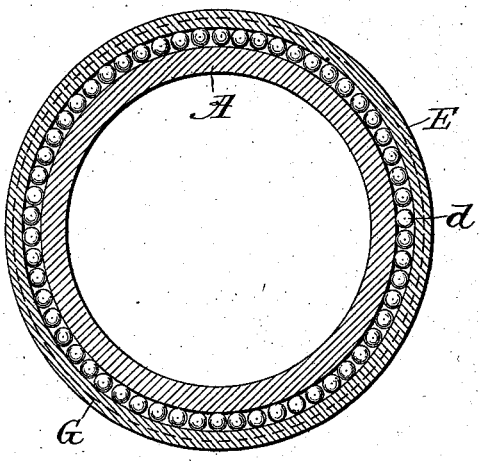


Fig. 3.



Witnesses:
J. L. Stewart.
W. E. Warriner

Joseph N. Long.
John McCaffrey.
Inventor.
By Wm K White.
Their Attorney.

UNITED STATES PATENT OFFICE.

JOSEPH N. LONG AND JOHN McCAFFREY, OF LE CLAIRE, IOWA.

BEARING AND SUPPORT OF RUDDER-STOCKS UPON VESSELS.

SPECIFICATION forming part of Letters Patent No. 381,148, dated April 17, 1888.

Application filed February 27, 1888. Serial No. 265,529. (No model.)

To all whom it may concern:

Be it known that we, JOSEPH N. LONG and JOHN MCCAFFREY, citizens of the United States, residing at Le Claire, in the county of Scott and State of Iowa, have invented a new and useful Improvement in the Bearing and Support for Rudder-Stocks upon Vessels, of which the following is a specification.

Our invention relates to improvements in bearings and supports for rudder-stocks upon vessels, and the objects are to furnish side supports and bearings which will materially reduce friction upon the stock in moving the rudder.

In vessels, particularly steamboats, the rudder is connected to a vertical stock which passes up through the rake of the boat and through the main deck at the stern.

Our invention consists in having a tube secured through the rake of the boat to its main deck, through which the rudder-stock passes, which tube has metallic balls, against which the lateral pressure of the stock is exerted, and metallic balls on the top of the tube to sustain the weight of the stock. We attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a top view of the tube which passes through the rake of the boat to the main deck, with the rudder-stock inserted and represented as cut off at the top of said tube. Fig. 2 is a top view of the rudder-stock represented as cut off just above the draw-band. Fig. 3 is a top view of the rudder-stock and tube cut off just above the balls G; and Fig. 4 is a vertical sectional view of the tube, rudder-stock, and balls.

Similar letters refer to similar parts throughout the several views.

A is the rudder-stock, composed of an iron tube, at the bottom of which the rudder is to be attached, and at the top of which is to be attached an arm or lever for manipulating the same. Neither the rudder or arm is shown in the drawings, because the construction of the same is well known; nor is the entire length of the rudder stock shown. If desired, the rudder-stock may be constructed of a shaft, instead of a tube, or may be of wood, instead of iron, when a shaft is used.

E is a tube, which is vertically secured and extends from the rake to the main deck at the stern of the boat. In the drawings we have not illustrated the stern of a boat, because the different varieties of construction are well known.

The rudder-stock A is inserted into the tube E, and at *d* a collar is shrunk around said stock, which bears against the bottom of tube E, and the space between the rudder-stock and the inner surface of tube E is filled with a complete circle of steel balls, G, of suitable size, resting on the top of collar *d* and against the inner surface of said tube and outer surface of said rudder-stock. At the top of tube E is shrunk around it collar *f*, which is sufficiently wide to extend a suitable distance above the top of said tube. The space between the inner surface of collar *f* above the tube and the outer surface of the rudder-stock is filled with a complete circle of steel balls, H, of suitable size, resting on top of said tube. A washer, *c*, is passed over and around said rudder-stock, so its under surface rests upon the top of balls G, and a draw-band, *b*, is passed around said rudder-stock and secured by the screw-bolt *i* and nut *j*, so as to keep washer *c* in position and prevent rudder-stock A from dropping down through the tube E.

The balls G and H may, if desired, be constructed out of any other metallic substance besides steel, and in place of the draw-band *b* a collar may be used, riveted or bolted to the rudder-stock.

In operation, when turning or rotating the rudder-stock, its weight, by means of washer *c*, will be thrown upon the balls H, while its lateral pressure is substantially against the sides of balls H and G, and said balls will roll, and thus diminish friction and materially assist to make the manipulation of the rudder more easy than by the methods heretofore in use.

Having described our invention, what we claim as new, and desire to secure by Letters Patent, is—

A rudder-stock for a vessel, having its weight vertically sustained by movable metallic balls upon the top of a tube through which it is vertically inserted, and its lateral pressure against movable metallic balls at the top and bottom of said tube, substantially as described.

JOSEPH N. LONG.
JOHN MCCAFFREY.

Witnesses:
F. A. EDWARDS,
C. A. JOHNSON.