

(No Model.)

J. WOOLL.

PROPELLER.

No. 316,592.

Patented Apr. 28, 1885.

Fig. 4.

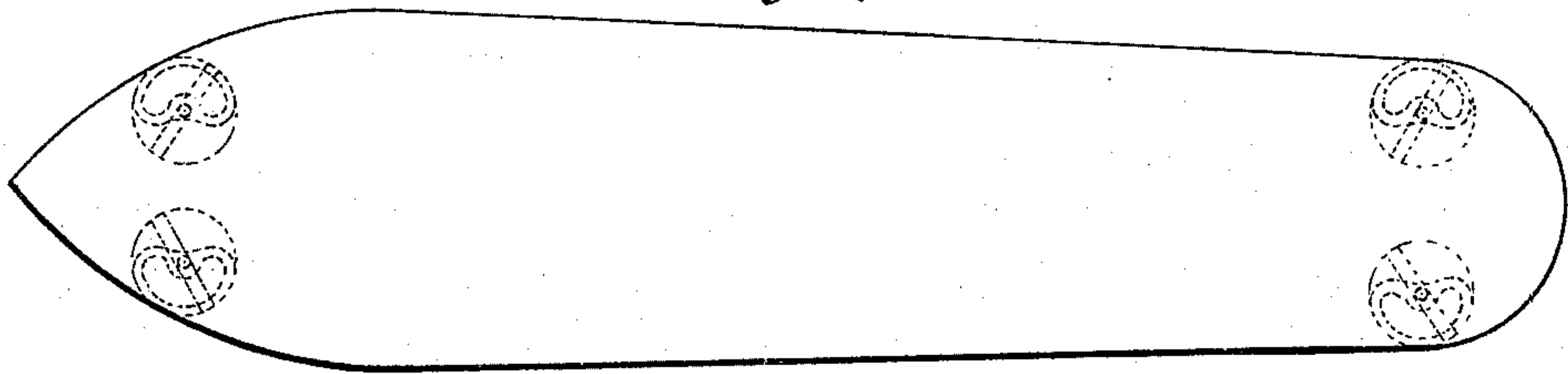


Fig. 1.

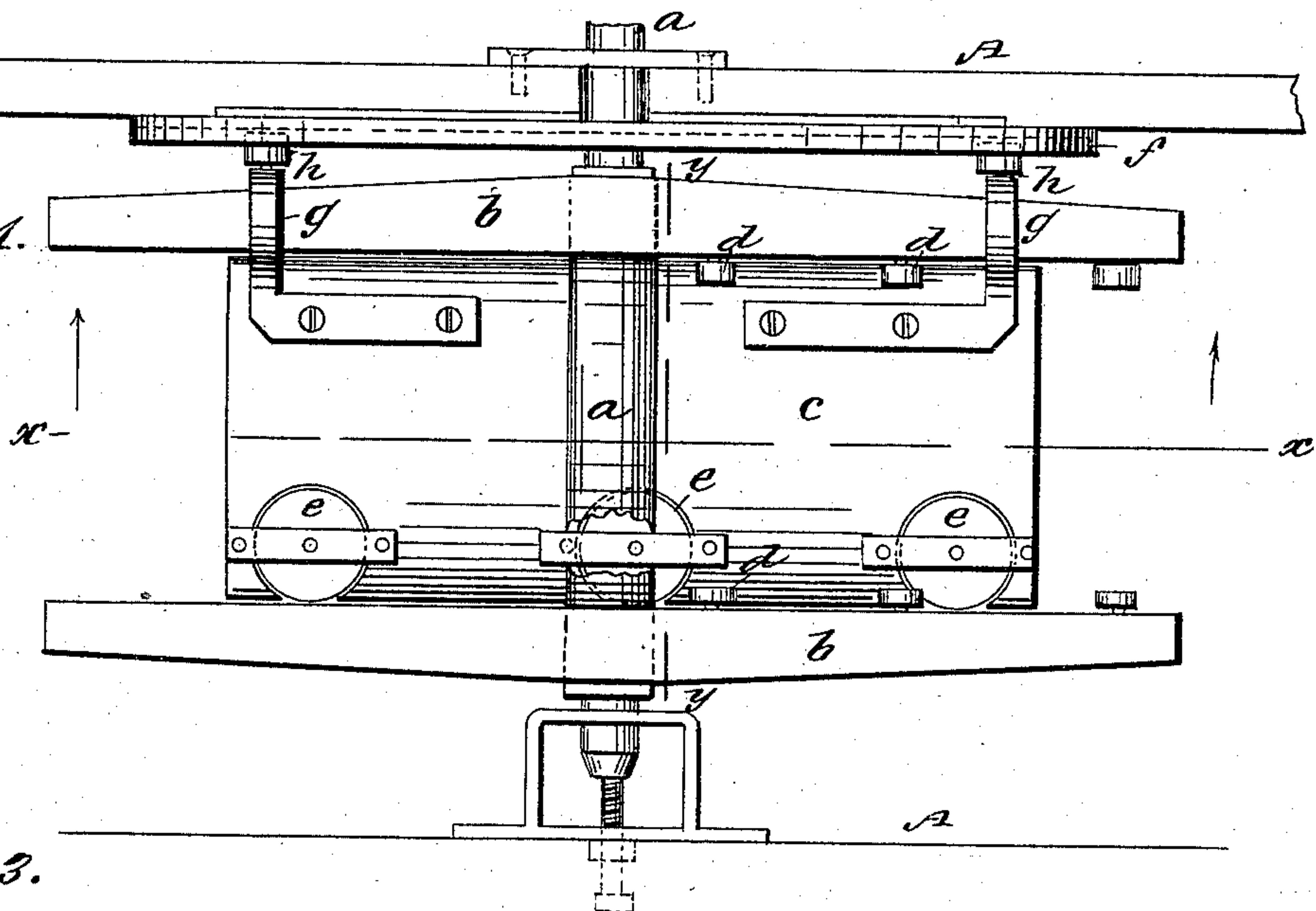


Fig. 3.

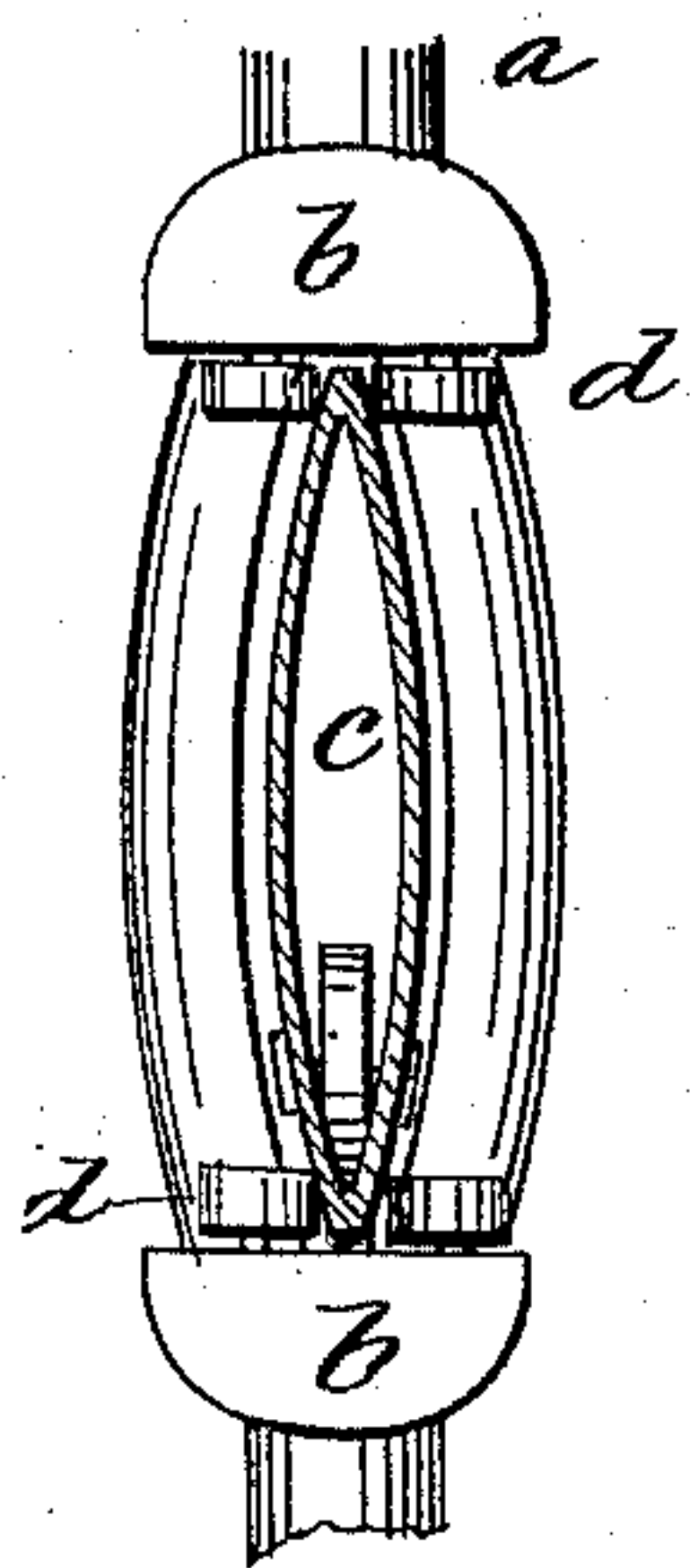
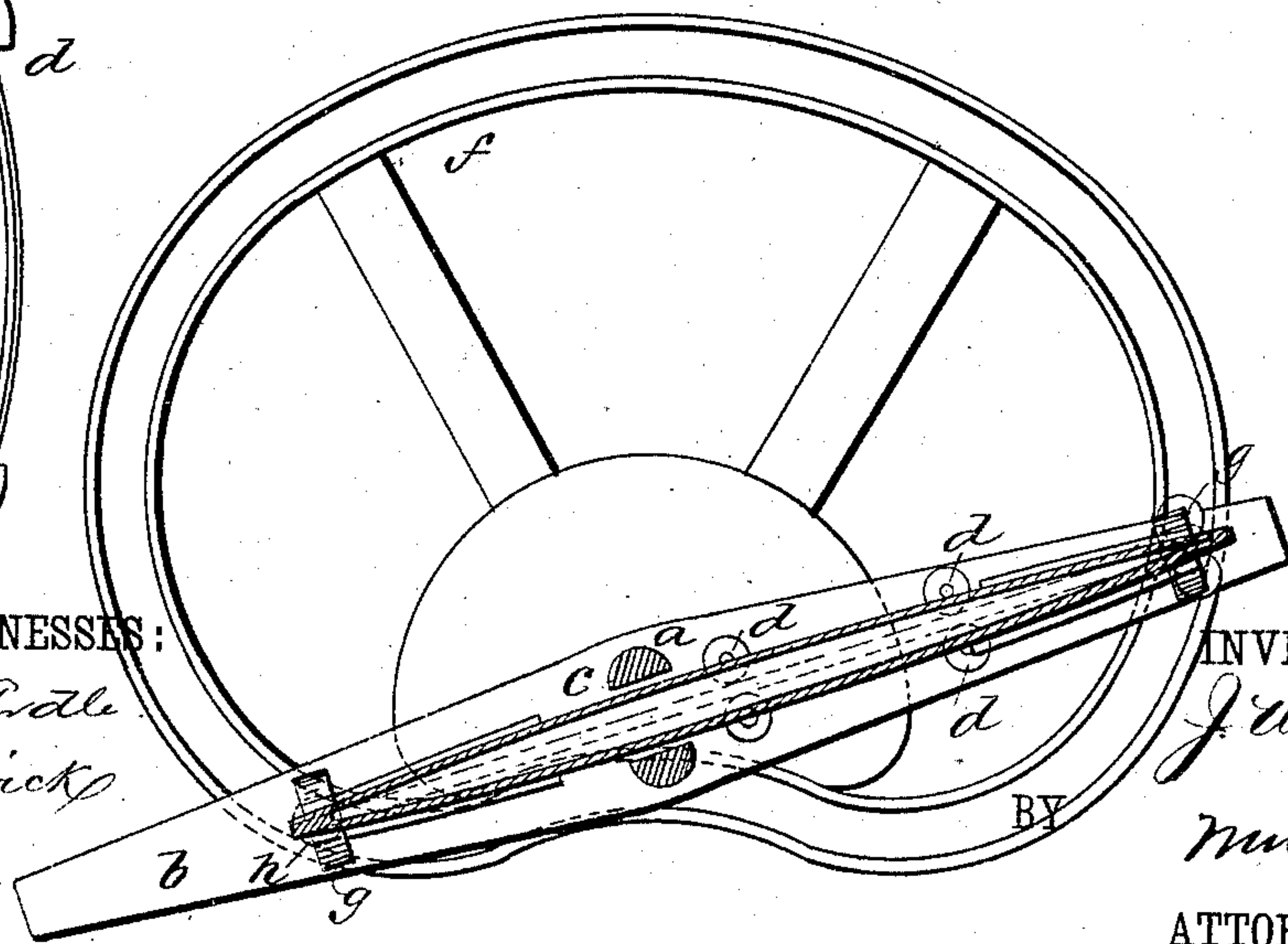


Fig. 2.



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PROPELLER.

SPECIFICATION forming part of Letters Patent No. 316,592, dated April 28, 1885.

Application filed July 26, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOHN WOOLL, of San Francisco, county of San Francisco, California, have invented a new and useful Improvement in Propellers, of which the following is a full, clear, and exact description.

This invention pertains to improvements in propellers, having for its object, while imparting the requisite propelling action to the paddle, to cause said paddle to perform its return movement with a minimum resistance to the water; and the invention consists of the paddle traveling between ways or bars carried by a shaft, said paddle moving through said shaft and acted upon by a cam-groove; and it consists, further, of details of construction as to certain parts thereof, substantially as hereinafter more fully set forth and claimed.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of a propeller of the improved construction. Fig. 2 is an inverted horizontal section on line *xx*, Fig. 1. Fig. 3 is a cross-section on the line *yy*, and Fig. 4 is a plan view representing a vessel and the location of the propellers thereon.

A A are fixed bars or supports placed horizontally, and carrying the vertical shaft *a* in suitable bearings.

b b are guide-bars attached to the shafts *a* so as to form parallel arms at a proper distance apart.

c is the paddle fitting snugly between the bars *b*, and held between guide-rollers *d*, attached on the bars at top and bottom and at both sides of the paddle, so that the latter is retained in place and is free to move endwise. The shaft is divided to allow movement of the paddle through it.

e e are sheave-rollers hung in recesses in the lower edge of paddles *c*, and supporting the paddle on the lower bar, *b*, so as to insure its easy movement. The paddle *c* is preferably swelled at the center and formed hollow, so as to give it buoyancy.

f is a continuous grooved cam fixed to the upper support *A*, with its main portion extending outward at one side; and *g g* are arms attached to the paddle and carrying friction-rollers *h*, that engage the groove of cam *f*.

In operation, the shaft *a*, carrying the bars *b* and the paddle, is rotated by suitable connections to a motor, and in this rotation the

paddle is caused to move endwise by the engagement of its arms *g* with the cam. The shape of the cam is such that the paddle moves sidewise against the water for about half its rotation with the arms, and it is then drawn inward and presents one end to the water.

In applying these propellers to a vessel, I prefer to place them one on each side at the bow, and in the same manner at the stern, as illustrated in Fig. 1. The paddles operate the same whether the shaft be rotated to the right or to the left.

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

1. In a propeller, the combination, with the divided shaft carrying the transverse bars or ways, of the paddle traveling upon said ways or bars and moving through said shaft and acted upon by a cam-groove, substantially as and for the purpose set forth.

2. In a propeller, the combination, with the divided shaft carrying the transverse bars or ways, of the paddle traveling through said shaft and upon said bars or ways, and acted upon by a cam-groove, said paddle having wheels set in its lower edge, and running upon one of said ways or bars, substantially as and for the purpose specified.

3. In a propeller, the combination, with the divided shaft carrying the transverse bars or ways, of the paddle traveling through said shaft and upon said ways, and having arms provided with rolls or wheels moving in a cam-groove, substantially as and for the purpose described.

4. In a propeller, the combination, with the divided shaft having bulged portions and carrying the transverse bars or ways, of the centrally-bulged hollow paddle traveling upon said ways or bars and through said shaft, and acted upon by a cam-groove, substantially as and for the purpose set forth.

5. In a propeller, the combination, with the divided shaft carrying transverse bars or ways, of the paddle traveling through said shaft and upon said ways, and provided with arms having rollers or wheels running in a cam-groove, and with wheels traveling upon the lower way or bar, said upper way or bar having rolls or wheels resting against the upper edge of said paddle, substantially as and for the purpose specified.

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