

L. W. LANGDON.

Improvement in Propellers for Vessels.

No. 129,571.

Patented July 16, 1872.

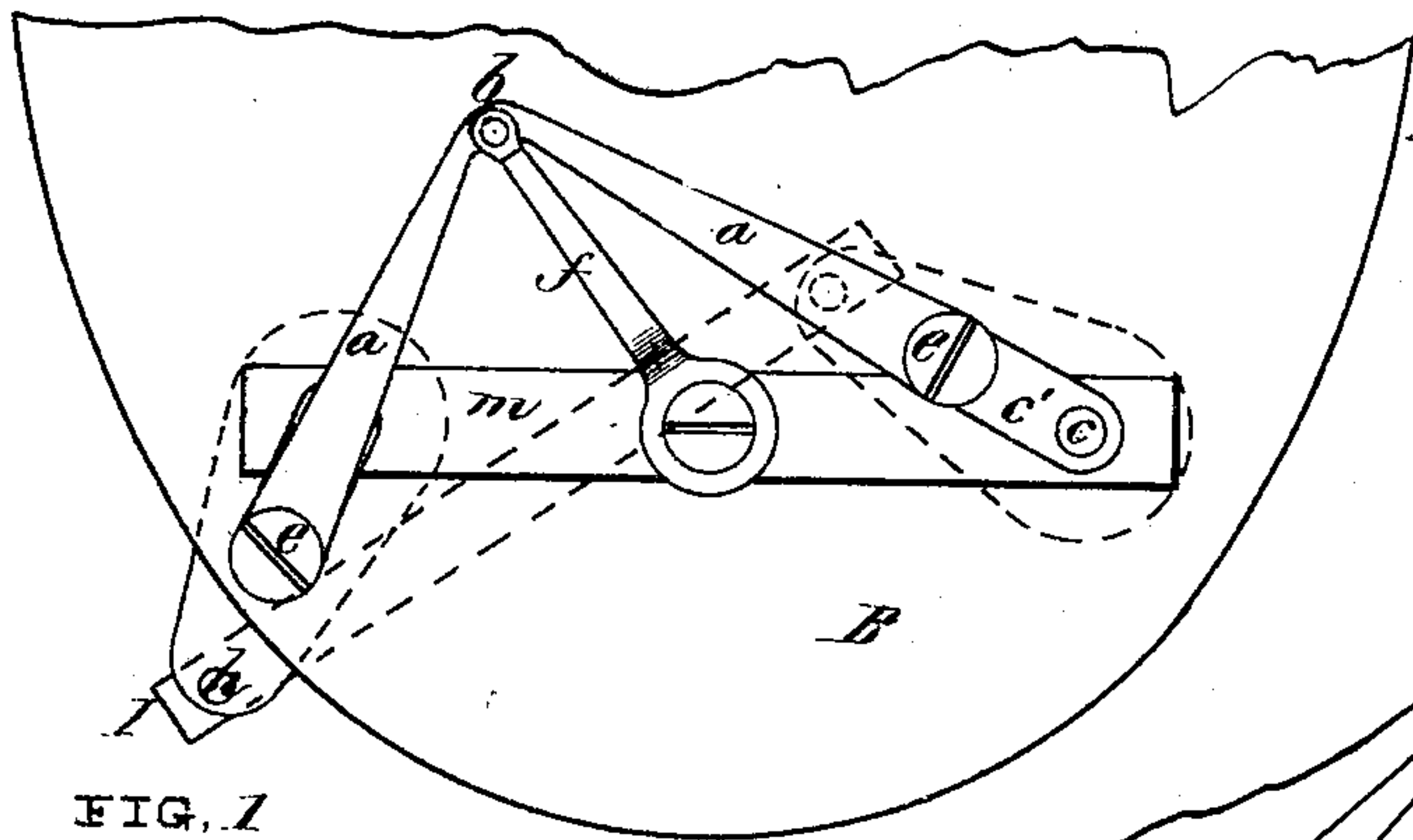


FIG. 1

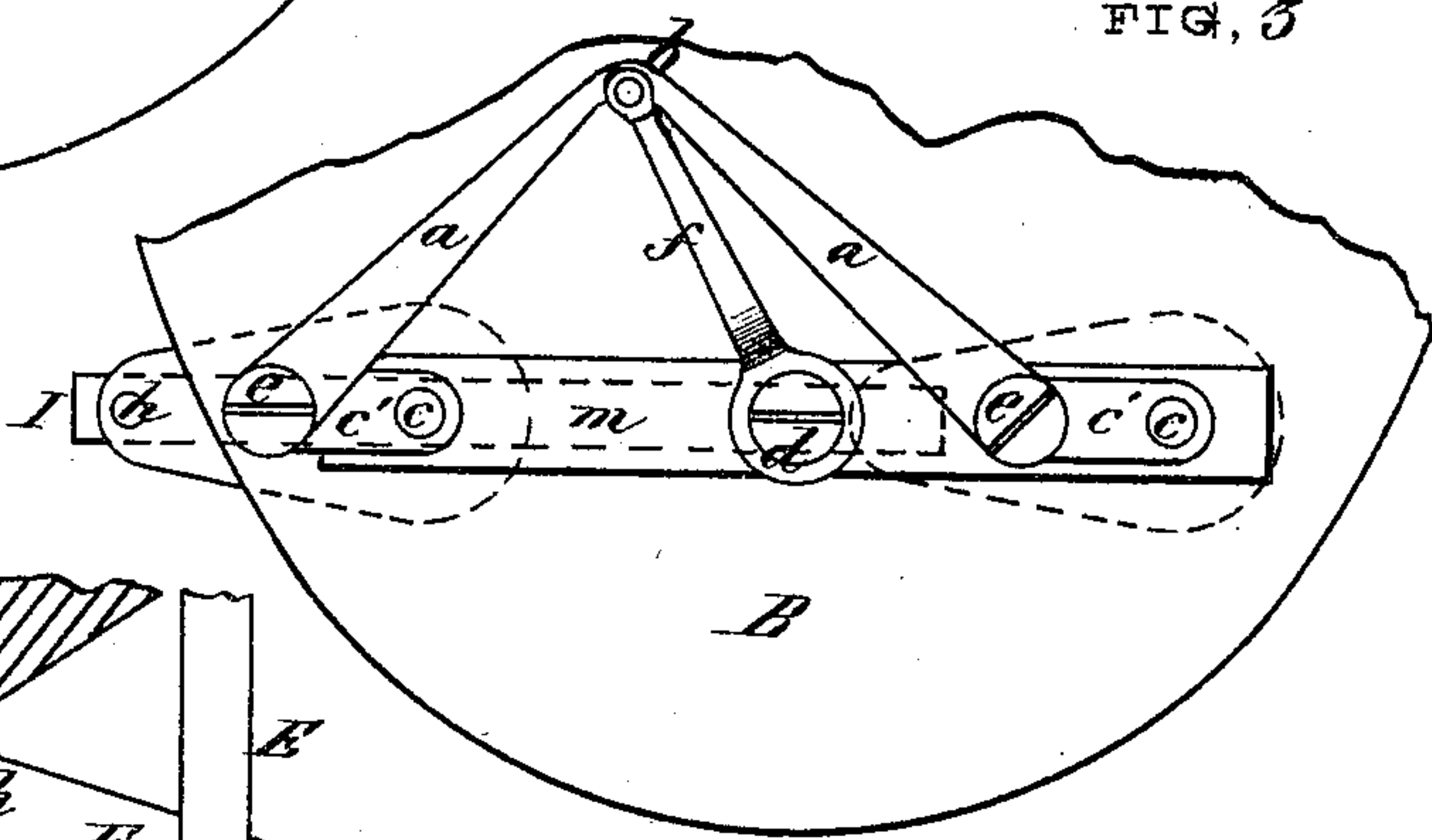


FIG. 3

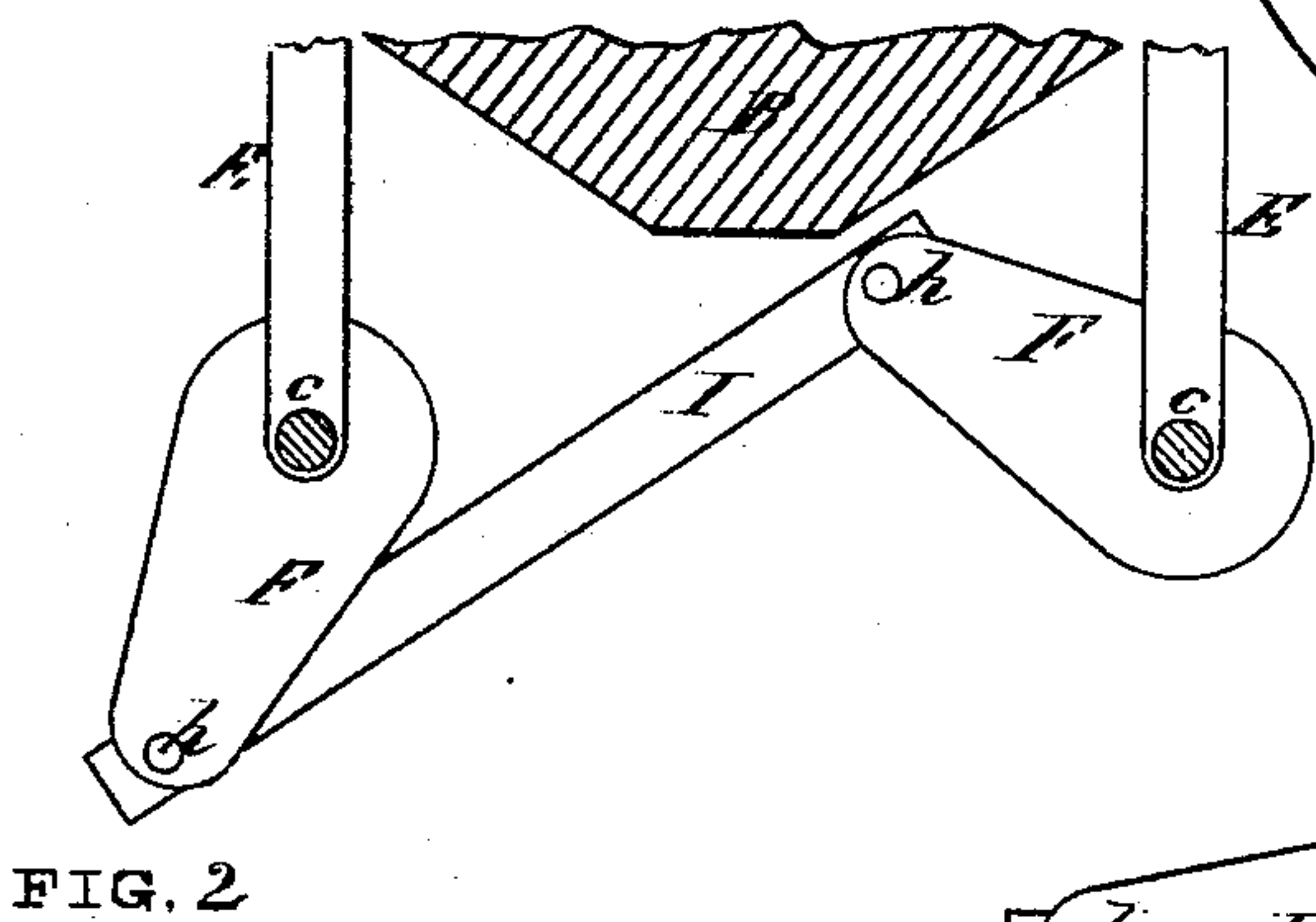


FIG. 2

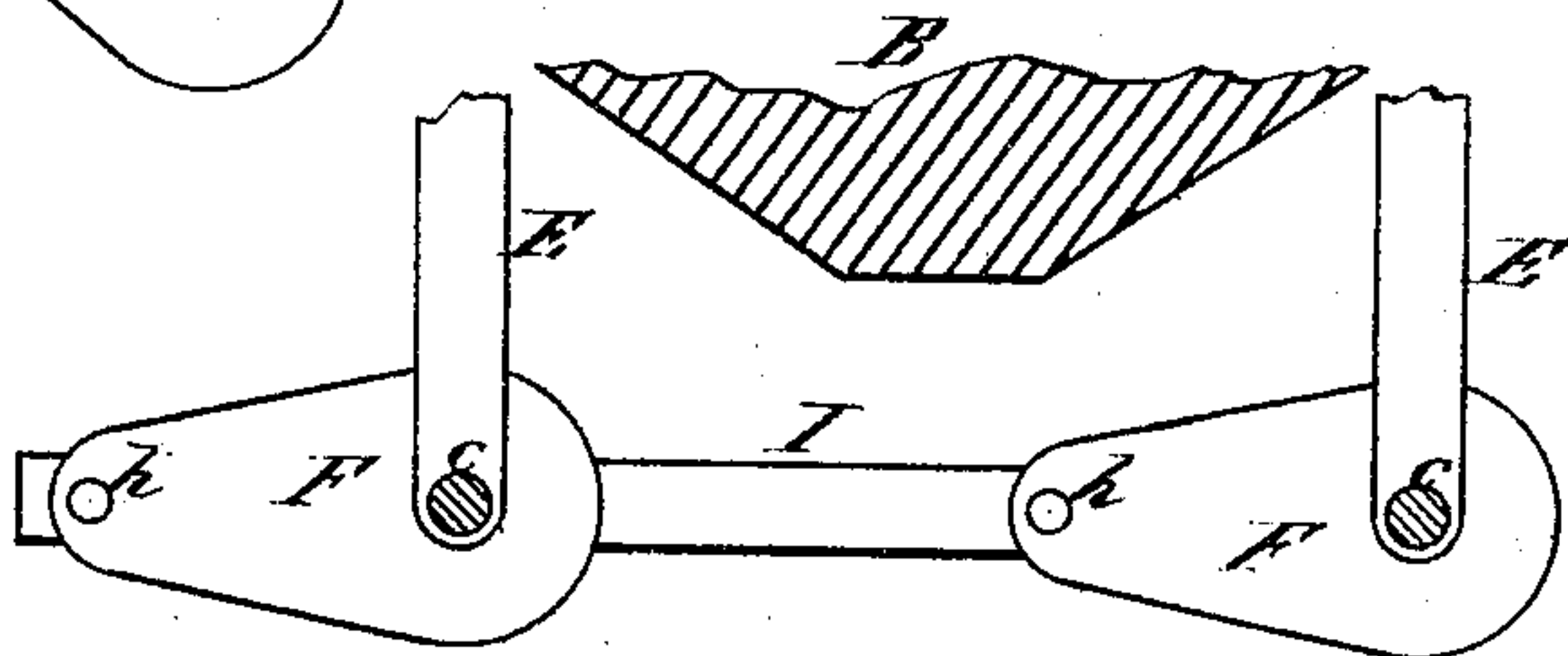


FIG. 4

Witnesses,

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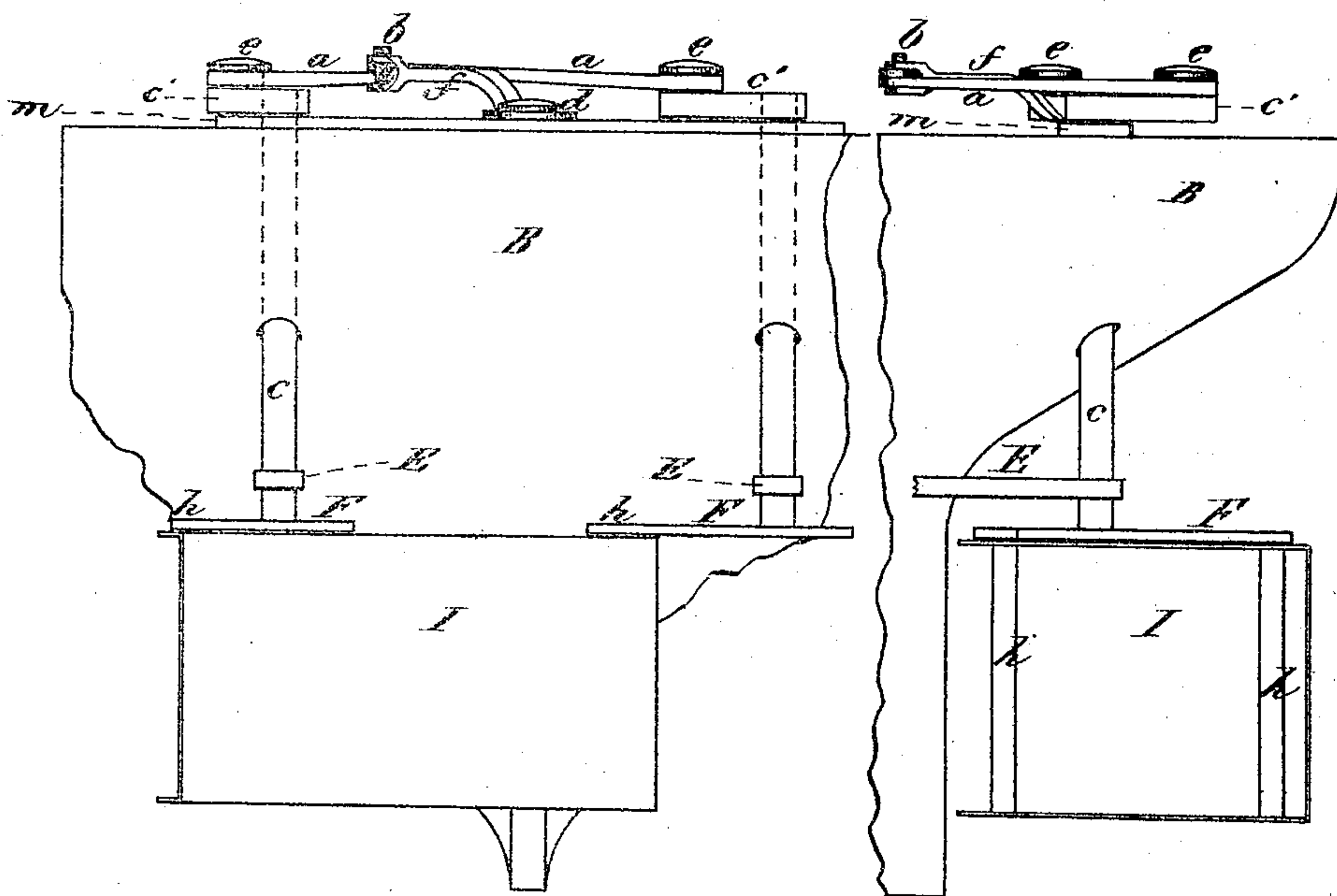


FIG. 5

FIG. 6

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UNITED STATES PATENT OFFICE.

LEANDER W. LANGDON, OF NORTHAMPTON, MASSACHUSETTS.

IMPROVEMENT IN PROPELLERS FOR VESSELS.

Specification forming part of Letters Patent No. 129,571, dated July 16, 1872.

To all whom it may concern:

Be it known that I, LEANDER W. LANGDON, of Northampton, in the county of Hampshire and State of Massachusetts, have invented a new and useful Improvement in Steam-Propellers; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making a part of this specification, and to the letters of reference marked thereon, in which—

Figure 1 is a plan view of my invention, showing the upper cranks and their connecting-rods on a line with their centers. Fig. 2 is a plan view, showing the position of the propeller and its cranks when the upper cranks and their connecting-rods are in the position shown in Fig. 1. Fig. 3 is a plan view, showing the upper cranks and their connecting-rods as off their line of centers. Fig. 4 is a plan view, showing the position of the propeller and its cranks when the upper cranks and their connecting-rods are in the position shown in Fig. 3. Fig. 5 is an end view of my invention as applied to a boat, and Fig. 6 is a side view of the same.

Nature of the Invention.

The nature of my invention relates to the mode of propelling steam-vessels by a propelling-blade arranged at the stern; and it consists of two shafts placed in a vertical direction at the stern of the vessel, having at their upper ends a crank attached, to each of which cranks is secured one end of a rod, and the other end of each rod is attached to a vibrating lever, which is pivoted to a point midway between the two cranks. To the lower end of each shaft is attached the end of a blade, and all the cranks are attached to the shafts in the same position relative to each other and to the shafts, and when power is applied to the cranks at the upper ends of the shafts both the upper and lower cranks are so connected with each other by the connecting-rods and by the propelling-blade that the shafts are caused to turn in opposite directions, and the propelling-blade, attached to and moved by the lower cranks, is caused to make a movement in the water similar in its path to the form of the figure or numeral 8 when placed in a horizontal position, the propelling-blade,

which stands in a vertical position, moving endwise transversely with reference to the length of the vessel, and also moving alternately, one end and then the other, back from the vessel and against the water, and thus operating to propel the vessel with little disturbance of the water as compared with the ordinary screw used; and to accomplish this motion of the propelling-blade is the object of my invention.

That others skilled in the art may be able to make and use my invention, I will proceed to describe the same.

In the drawing, B represents the stern of a vessel, having the shafts *c c* extending down in a vertical direction, and having a bearing in the pieces E and *m*, which are secured properly to the vessel, or in other suitable pieces provided for that purpose, and having attached at the upper end of each the piece *c'*, with the crank-pin *e* therein, by means of which a rotary motion may be given to each shaft. A rod, *a*, is connected at one end to the crank-pin *e*, and at the other end to the vibrating lever *f*, which is pivoted at *d* midway between the shafts *c*. To the lower end of each shaft *c* is attached a crank-piece, F, and to the end of each said crank-piece F is attached the plate I, which is kept in its vertical position and pivoted to the said crank-pieces by the rods *h* or other equivalent and suitable means.

The operation of my invention is as follows: If a piston-rod, placed lengthwise the vessel, be connected to one of the upper crank-pieces *e* to rotate its shaft *c*, the other crank and shaft *c* will also be caused to rotate by means of the connecting-rods *a* and lever *f*, but the two shafts with their cranks will be rotated in opposite directions.

It will be seen, by reference to Fig. 1, that when the cranks *c'* and connection-rods *a* are in a line or on their centers, the lower cranks F and the blade I are not in a line and are off their centers, and vice versa, so that as power is applied to rotate the shafts *c* the lower set of cranks F assists the upper set *c'* over the "dead-point," and vice versa, and there is, consequently, no "dead-point" to overcome in its practical operation with power applied as above mentioned. As the shafts *c* are thus rotated the blade I is carried endwise by the cranks F rotating in opposite directions alter-

nately from one side of the stern of the vessel to the other, and each time it is so moved the end of the blade which projects furthest to one side of the keel is also forced backward from the vessel and against the water, operating to push the vessel forward; and the whole force of this backward movement of the blade is exerted in a direct line with the length of the vessel, and a great gain of motive force is the result. If the rotary motion of the shafts *c* be reversed, the force of the blade *I* is exerted against the water in the opposite direction, and the vessel is caused to move backward.

For practical operation the upper crank *c'* might be made at any point upon the shaft *c*, as is common in the ordinary crank-shaft, or it might be made at the upper end of the shaft, according to the location of the engine.

Should the rudder of a vessel provided with a propeller of this description become broken or disabled, the vessel might easily be steered by occasionally stopping the engines with the blade in the position shown in Fig. 2, or in Fig. 4, or in any other position which would give the vessel the proper course, and the blade would in that case perform the functions of a rudder for the time being, as the different

positions of the blade, when thrown more to one side of the keel than the other, tend to impede the speed of the vessel or to give it steerage upon the side to which it may be moved.

It is obvious that the shafts *c* may be connected and be made to revolve in opposite directions by means of other devices equivalent to that which I have described and shown; and though I do not limit myself to the use of the cranks *c c'*, rods *a*, and lever *f*, I much prefer this means of connection. It is also obvious that the propeller may be operated by one engine or cylinder; but I prefer the use of two.

What I claim as my invention is—

The combination of the shafts *C*, cranks *F*, propelling-blade *I*, and the cranks *c c'*, when said upper cranks are coupled substantially as described, whereby the shafts are made to revolve in opposite directions, and the propelling-blade is thereby operated in manner substantially as set forth.

L. W. LANGDON.

Witnesses:

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