

# N. Nolan. Propeller.

N<sup>o</sup> 72319

Patented Dec. 17, 1867.  
Fig. 1.

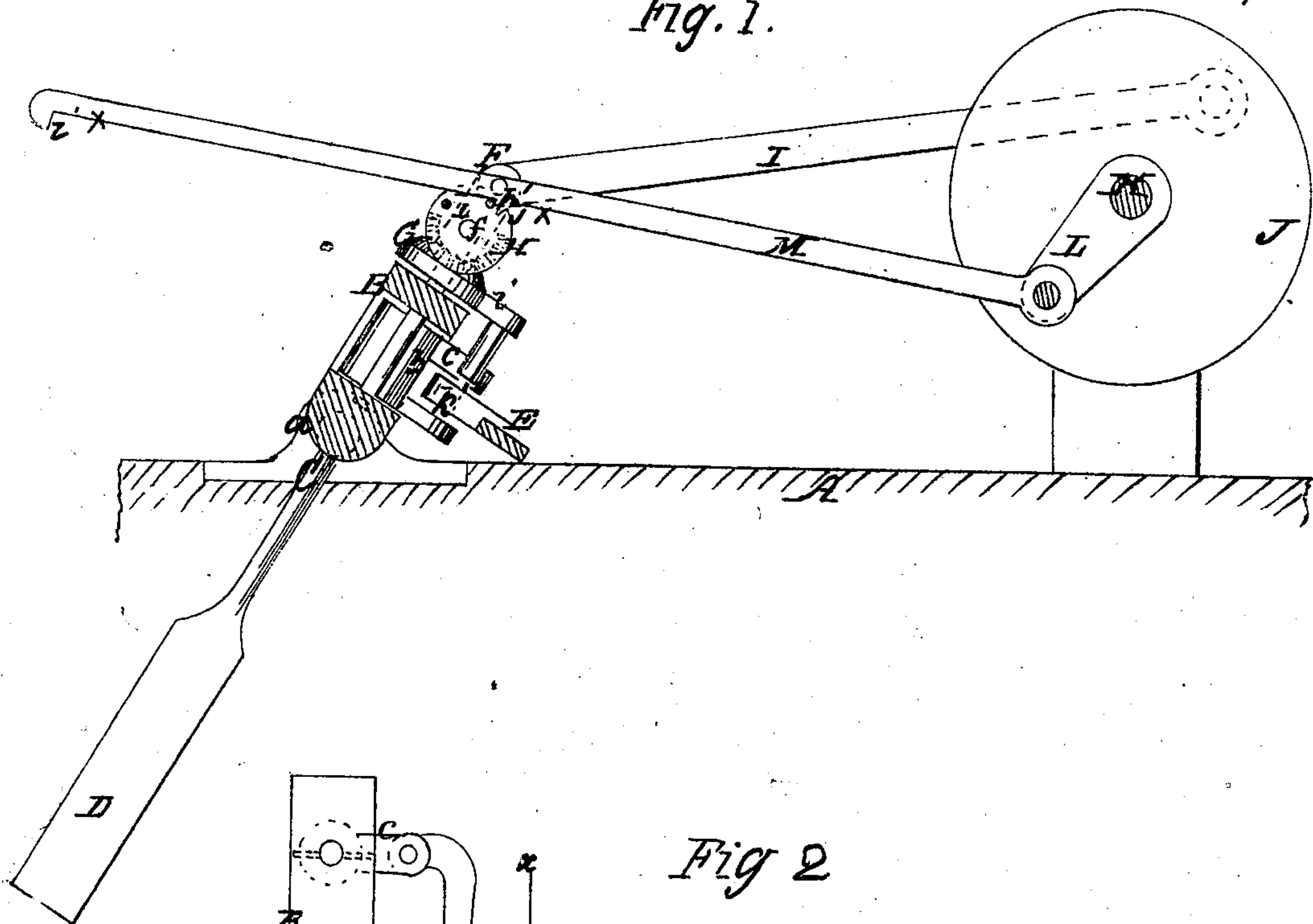


Fig 2

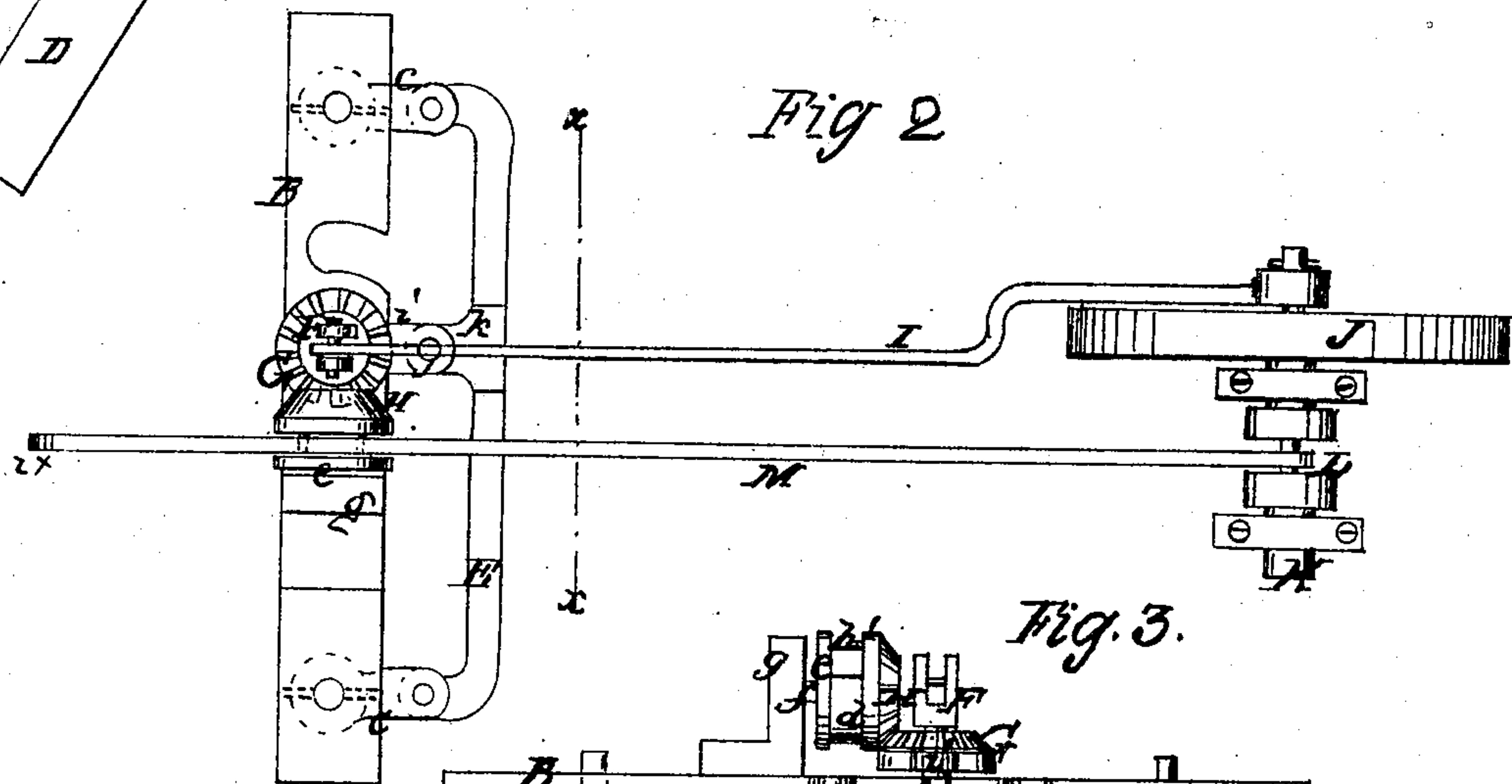
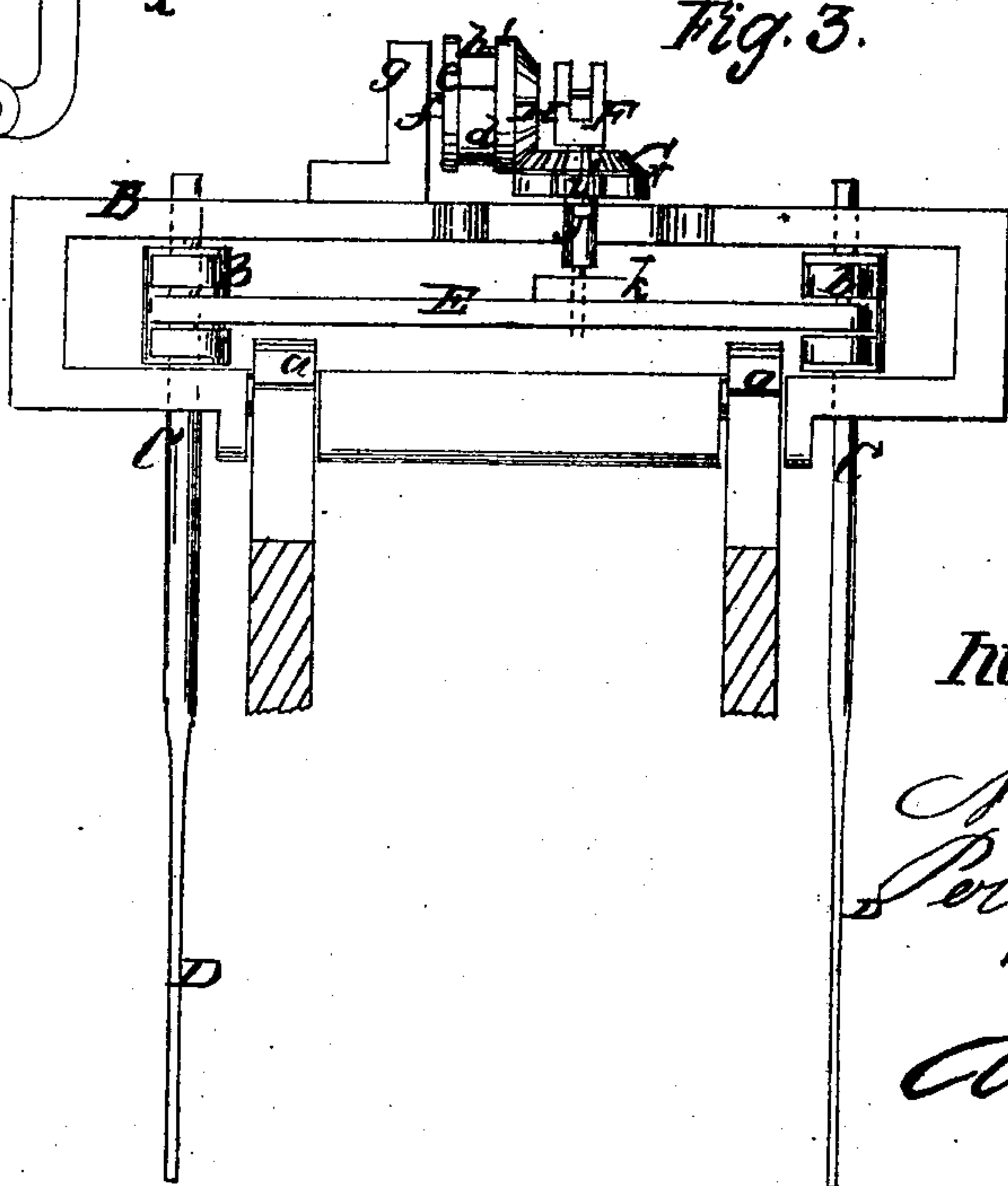


Fig. 3.



Witnesses.

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# United States Patent Office.

NICHOLAS NOLAN, OF NEW YORK, N. Y.

Letters Patent No. 72,319, dated December 17, 1867.

## IMPROVED PROPELLER.

The Schedule referred to in these Letters Patent and making part of the same.

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, NICHOLAS NOLAN, of the city, county, and State of New York, have invented a new and improved Propeller; and that the following description, taken in connection with the accompanying drawings, hereinafter referred to, forms a full and exact specification of the same, wherein I have set forth the nature and principles of my said improvements, by which my invention may be distinguished from all others of a similar class, together with such parts as I claim; and desire to have secured to me by Letters Patent.

This invention relates to a new and improved propeller for propelling vessels of all kinds, and it consists in a novel manner of operating and feathering oscillating blades or paddles, as hereinafter shown and described, whereby a very efficient propeller is obtained, and one which may be operated by a very moderate power. In the accompanying sheet of drawings—

Figure 1 is a side sectional view of my invention.

Figure 2, a plan or top view of the same.

Figure 3, a transverse section of the same, taken in the line  $x x$ , fig. 2.

Similar letters of reference indicate like parts.

A represents a boat or vessel, to which my invention is applied, and B is a rock-frame, which is fitted in bearings  $a$  on the vessel, the rock-frame being allowed to work freely in the bearings, and extending entirely across the boat or vessel, projecting beyond the sides thereof, and having the cylindrical shank C of a blade or paddle, D, fitted in each end. These blades or paddles are allowed to turn freely in the frame B, and their shanks C have each a hub,  $b$ , on them, provided with projections  $c$ , which are connected by a bar, E. In the rock-frame B, at a point near its centre, there is fitted, at right angles, a shaft, F, having a bevel-wheel, G, upon it, into which a bevel-segment, H, gears, and this segment is connected, by a hub or bar,  $d$ , with a circular plate,  $e$ , the axis or shaft  $f$  of which has its bearing in an upright,  $g$ , on the rock-frame. In the plate  $e$  and segment H there are fitted two pins,  $h h'$ , and these pins extend entirely across the space between the plate  $e$  and segment H. The bevel-wheel G on the shaft F has an arm,  $i$ , projecting from it, provided with a pendent-pin,  $j$ , which is fitted in an arm,  $k$ , on the bar E, and the upper end of shaft F is connected, by a rod, I, with a crank-wheel, J, on the driving-shaft K, the latter being provided with a crank, L, which has a rod, M, connected to it, the latter working in the space between the circular plate  $e$  and the bevel-segment H, and resting upon the pins  $h h'$ . The rod M has a hook,  $i^x$ , at its outer end, and a shoulder,  $j$ , upon it at some distance from its outer end, as shown in fig. 1.

From the above description it will be seen that, as the driving-shaft K is rotated, a rock motion will be given the frame B by the crank-wheel J and rod I, and the blades or paddles D thereby operated with an oscillating or vibrating motion, and at the termination of each stroke they are feathered, or turned so as to present their broad surfaces to the water as they are moved or drawn back to propel the vessel forward, and present a narrow edge to the water, as they are moved forward, the narrow edges moving through the water with but very little resistance. The blades are feathered by the rod M acting against the pins  $h h'$ , the hook  $i^x$  catching over the pin  $h$  when the blades D reach the termination of their working-stroke, and turning the segment H, and thereby the shaft F, so that the blades D will be presented edgewise to the water, and, as the blades reach the termination of their forward movement, the shoulder  $j$  of the rod M will strike the pin  $h$  and turn the blades, so that their broadsides will be presented to the water as they move to propel the boat forward. This feathering operation is very quickly performed at the termination of each stroke, occasioning no loss of power.

The invention is applicable in all cases where a propeller may be used, and may be employed in aerial navigation, if that ever be successfully attained.

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

The blades or paddles D D, fitted in the rock-frame B, and operated from the driving-shaft K, through the medium of the crank-wheel J and connecting-rod I, or their equivalents, in combination with the rod M attached to the crank L on the driving-shaft, and provided with the hook  $i^x$ , and shoulder  $j$ , to catch over pins  $h h'$ , the bevel-segment H and the bevel-wheel G on shaft F, connected with the bar E, all being arranged to operate in the manner substantially as and for the purpose set forth.

The above specification of my invention, signed by me, this 9th day of May, 1867.

NICHOLAS NOLAN.

Witnesses:

WM. F. McNAMARA,

J. A. SERVICE.