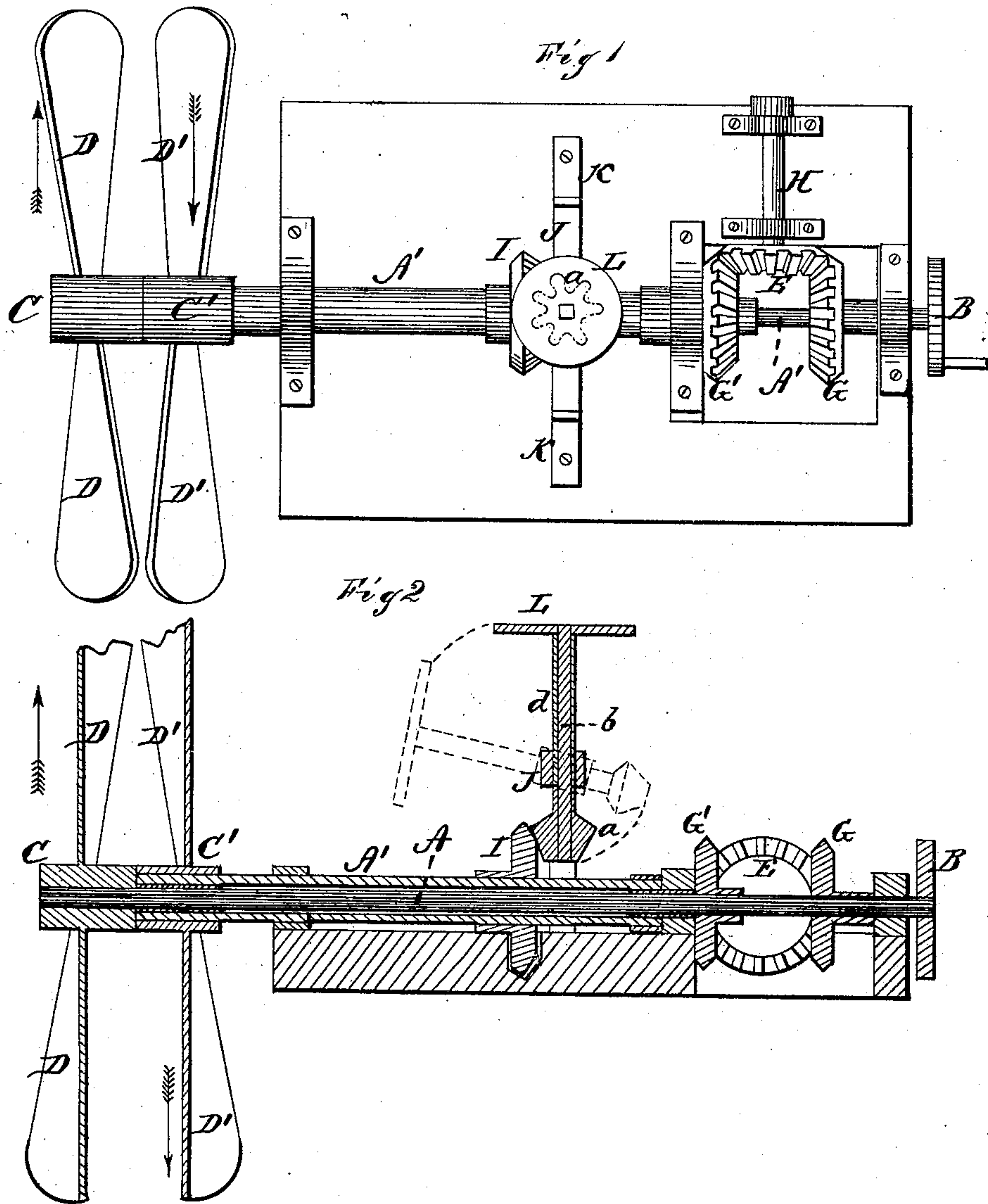


A. McDONALD.

Means for Operating Screw Propellers.

No. 145,000.

Patented Nov. 25, 1873.



WITNESSES.

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# UNITED STATES PATENT OFFICE.

ALEXANDER McDONALD, OF CUMBERLAND, MARYLAND.

## IMPROVEMENT IN MEANS FOR OPERATING SCREW-PROPELLERS.

Specification forming part of Letters Patent No. **145,000**, dated November 25, 1873; application filed October 27, 1873.

*To all whom it may concern:*

Be it known that I, ALEXANDER McDONALD, of Cumberland, in the county of Alleghany and in the State of Maryland, have invented certain new and useful Improvements in Propellers; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon, making a part of this specification.

My invention relates to propellers in which two paddles are used that revolve in opposite directions; and it consists in certain devices for assisting the machinery over the dead-center; also, in the combination of certain elements, as hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing, in which—

Figure 1 is a plan view, and Fig. 2 is a longitudinal vertical section, of my propelling device.

A represents a horizontal shaft, having at its front end a crank-wheel, B, or other suitable device, to be connected with one or more engines to revolve the shaft. Upon the rear end of the shaft A is firmly secured a hub, C, provided with two propeller-blades, D D', on opposite sides. The shaft A, for a certain distance of its length, passes through a tube or sleeve, A', upon the rear end of which is secured a hub, C', provided with two propeller-blades, D' D', on opposite sides. The rear end of the sleeve A', with its hub C', is close up against the front end of the hub C on the shaft A, so that the propeller-blades D and D' will be tolerably close together. Upon the shaft A is secured a beveled or miter cog-wheel, G, which gears with a similar wheel, E, upon the end of a shaft, H, and this wheel gears with another beveled or miter cog-wheel, G', secured on the sleeve A'; and by this arrange-

ment of gearing the sleeve is revolved in the opposite direction from that of the shaft A.

It often happens, where one engine only is used, that the engine, when stopped, is on the dead-center, and then there is always more or less difficulty in starting it again. For the purpose of assisting the machinery over the dead-center, I attach a beveled or miter cog-wheel, I, to the sleeve A'. This cog-wheel gears with a similar pinion, a, placed on the end of a shaft, b, which passes through a tube, d, secured to a rocking bar, J, hung upon trunnions in standards K K. On the upper end of the shaft b is a hand-wheel, L, for turning the same. When this device is not in use or needed it is thrown out of gear by the bar J, turning on its trunnions, as shown by dotted lines in Fig. 2.

When necessary to assist the machine to get over the dead-point, the pinion a is thrown in gear with the wheel I, and by turning the hand-wheel L a short turn in either direction the dead-point will be passed and the engine will operate.

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

1. In connection with a propeller-shaft, the combination of the gear I and pinion a, having a hand-wheel connected therewith, and having bearings in a rocking bar, as and for the purposes set forth.

2. In combination with the blades D D', the shaft and sleeve A A', and gears, as set forth, the gear I, pinion a, hand-wheel L, and rocking shaft, all substantially as and for the purposes set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 14th day of October, 1873.

A. McDONALD.

Witnesses:

EDM. F. BROWN,  
C. L. EVERT.