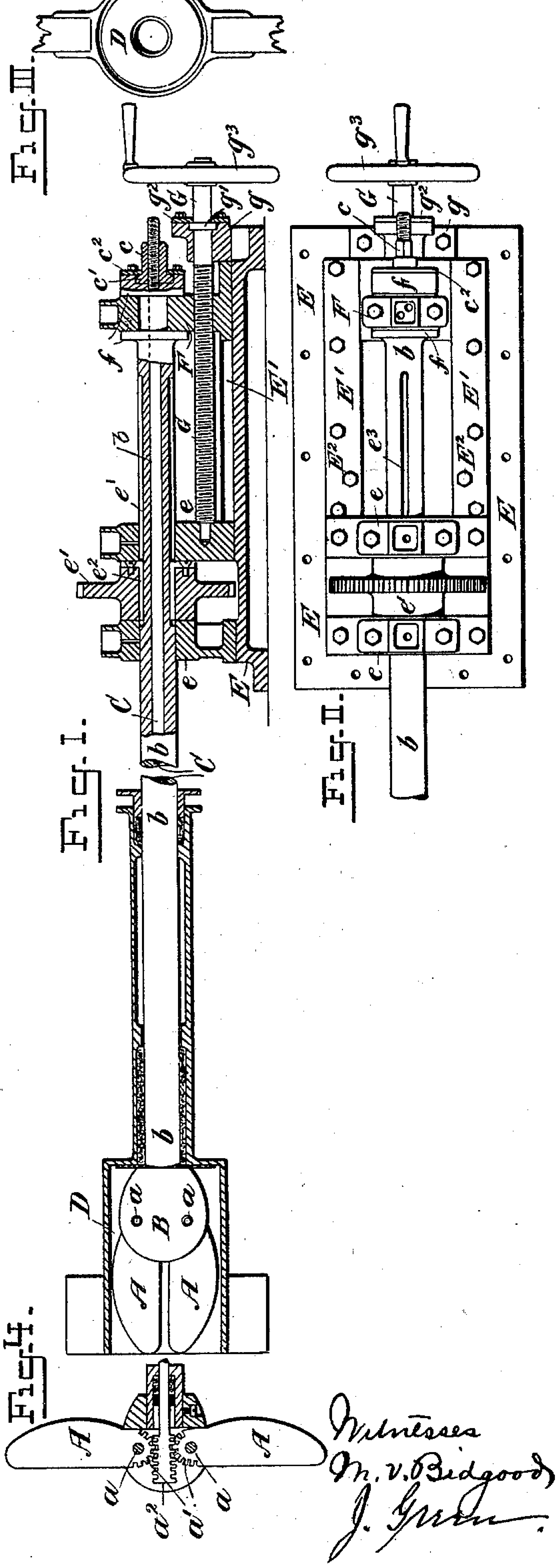
(No Model.)

J. FERGUSON.

FEATHERING AND SHEATHING PROPELLER BLADES.

No. 598,337. Patented Feb. 1, 1898.



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JOHN FERGUSON, OF LONDON, ENGLAND.

FEATHERING AND SHEATHING PROPELLER-BLADES.

SPECIFICATION forming part of Letters Patent No. 598,337, dated February 1, 1898.

Application filed March 2, 1897. Serial No. 625,794. (No model.) Patented in England November 21, 1895, No. 22,189, and in France October 29, 1896, No. 260,846.

To all whom it may concern:

Be it known that I, JOHN FERGUSON, engineer and shipbuilder, of West Pier, Leith, N. B., and 4 St. Georges Square, London, S. W., England, have invented new and useful Improvements in the Feathering and Sheathing of Steamship-Propellers, (for which I have received Letters Patent in Great Britain, No. 22,189, dated November 21, 1895, and in France, No. 260,846, dated October 29, 1896,) of which the following is a specification.

This invention relates to improvements in the feathering and sheathing of steamship-propellers, and has for its object to provide a vessel with a propeller which, instead of being immovably fixed in one position at a set distance from the rudder or stern-post, can be drawn into or toward the body of the ship, so that when the vessel is sailing, moving among ropes, nets, &c., or in any position where an exposed propeller might be disadvantageous, it is entirely out of sight, offers no hindrance to the progress of the vessel, and shows no projection that would catch any object floating or passing alongside.

Referring to the accompanying drawings, which form a part of this specification, Figure 1 is a longitudinal section, parts being in elevation; Fig. 2, a plan; Fig. 3, an end view; and Fig. 4 is a detail view showing the blades out of the sheath.

Referring to the said drawings, I mount or pivot the propeller-blades A on pins a at a distance from the center of the boss B, the inner ends of the blades being formed with teeth a, which engage with a rack a^2, formed upon the end of the shaft C, which works within the outer shaft b, whereby upon the pulling forward of the shaft C the blades change from a vertical or outspread position, as shown in Fig. 4, to a fore-and-aft or feathered position, as shown in Fig. 1.

The shaft b after the blades have been feathered is free to be drawn forward within the vessel, and thus cause the propeller to enter the aperture D in the stern-post of the vessel, which in this case is circular, or, in the case of twin screws or where deemed advisable, corresponding apertures on each side of the ship.

In order to operate the inner shaft C, which has the rack a^2 formed thereon, I provide the outer shaft b, within which the shaft C works, with a nut c, into which the end of the inner shaft C, which is screwed, engages. The said nut c is formed with a collar c', which works in a recess in the outer shaft b and is held in position by a plate c^2, so that it is free to be revolved to operate the shaft b in either direction, as required.

For the purpose of drawing the propeller within the aperture in the stern-post I employ a sole-plate E, upon which are mounted two bearings e, within which the shaft b revolves, the shaft being operated by means of a spur or sprocket wheel e', which is secured to the shaft by means of two keys e^2, which work in slotted keyways e^3 in such a manner that the shaft is capable of being moved longitudinally while at the same time being revolved by the said wheel a'. The end of the said outer shaft b is also mounted within a bearing F, which is capable of sliding within guides E′ upon the sole-plate E and is secured therein by means of two collars f. The said bearing F is moved backward and forward by a screwed shaft G, the one end of which is mounted within the bearing e, the other end being mounted and secured within the bearings by a collar g and retained by a plate g^2, the said screw being operated by a hand-wheel g^3. The bearing F when the propeller is in its exposed position is secured by means of two pinching-pins E^2.

It will be readily seen from the foregoing that after the blades have been feathered through the medium of the nut c by operating the hand-wheel g^3 the whole propeller can be easily drawn into the aperture D, and vice versa.

An object to which this propeller is particularly applicable is the assistance that may be given by their being used as steering-engines, in which case one might be placed on each quarter of an ironclad or other unwieldy vessel and with an engine applicable to both be of the greatest assistance in pushing around the vessel's stern or bow when maneuvering in confined spaces, especially at slow speeds.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. In means for feathering and sheathing steamship-propellers, the combination of the hollow shaft *b*, the inner shaft C having a rack a^2 formed on one end, the nut *c* at the inner end of the hollow shaft for advancing and withdrawing the inner shaft, and the blades A pivoted within the boss B having their inner ends toothed to engage with the said rack, with the aperture D in the stern-post, whereby the blades can be feathered and the propeller withdrawn into the vessel as described and shown.

2. In means for feathering and sheathing steamship-propellers, the combination with a propeller having blades feathered or changed from a vertical to a fore-and-aft position and an aperture in the stern-post of the vessel, of a sole-plate E, bearings *e* within which the propeller-shaft revolves, a driving spur-wheel *e'* keyed loosely upon the shaft to permit of its being moved longitudinally, a bearing F sliding upon the sole-plate E, within which the propeller-shaft is retained by collars and a screw G for operating the said sliding bearing, whereby the propeller can be withdrawn into or projected out from the aperture in the stern-post, as described and shown.

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