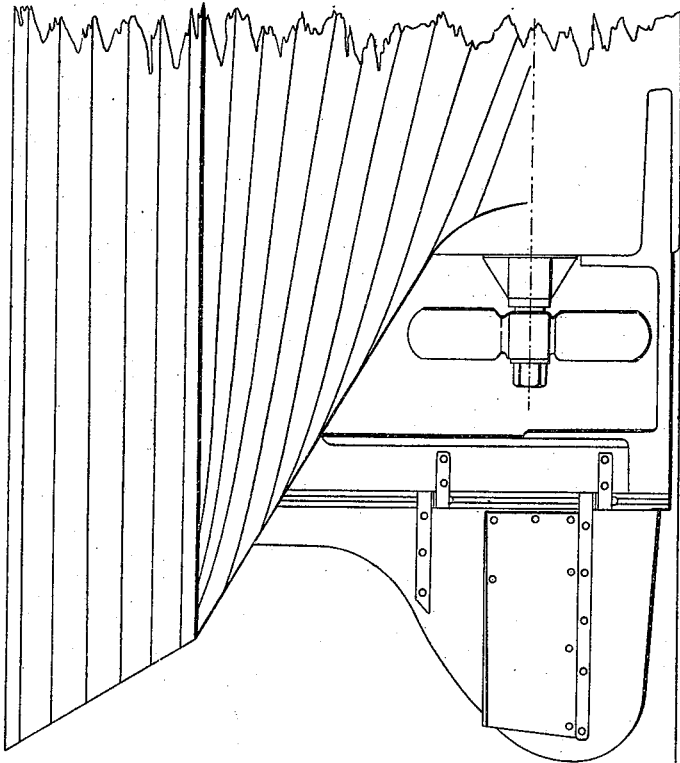


# *J. M.<sup>c</sup> Grigor Croft,* *Steering.*

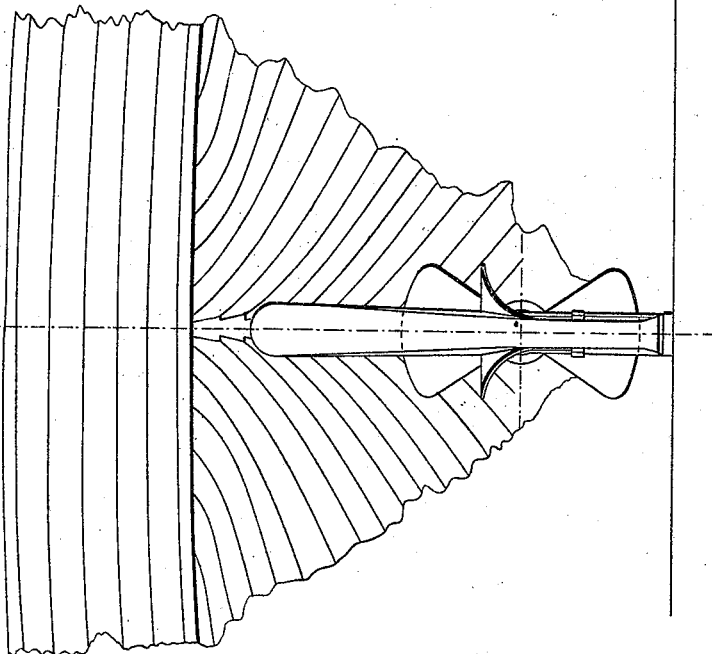
*N<sup>o</sup> 54,474.*

*Patented May 1, 1866.*

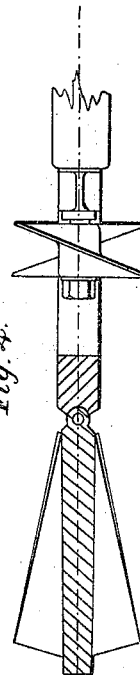
*Fig. 2.*



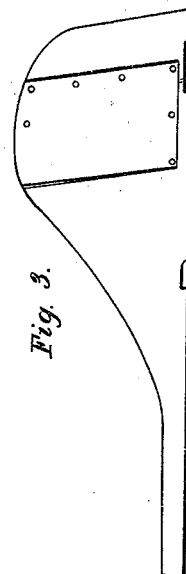
*Fig. 1.*



*Fig. 4.*



*Fig. 3.*



*Witnesses.*

*Thos Henry  
John Sears*

*Inventor.*

*J. M.<sup>c</sup> Grigor Croft*

# UNITED STATES PATENT OFFICE.

J. McGRIGOR CROFT, OF LONDON, GREAT BRITAIN.

## IMPROVED RUDDER.

Specification forming part of Letters Patent No. **54,474**, dated May 1, 1866.

*To all whom it may concern:*

Be it known that I, JOHN McGRIGOR CROFT, of St. John's Wood, London, in the county of Middlesex and Kingdom of Great Britain, doctor of medicine, have invented a new and useful Improvement in Rudders; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1 is a fore-and-aft view of a steamer's rudder with blades attached; Fig. 2, a lateral view of rudder with blades; Fig. 3, a perpendicular view of blades; and Fig. 4, a deep-sea rudder with blades—that is to say:

My invention relates to a new and useful improvement in rudders, whereby I obtain greater, quicker, and easier steering power.

It consists in applying to each side of an ordinary rudder diagonal, curved, or oblique blades, which are attached below the shoulder and at such a distance below the water-line as to attain the dense water. These blades stand obliquely out from the sides of a rudder like wings, their direction being upward and backward, and are suitably fastened to the same by their lower and under surfaces.

The accompanying drawings represent different views of my improvement, as above. The

blades may be made of iron or any suitable metal or wood. Bars of metal or other braces may be used to connect the free edges of wings with the body of a rudder, or the blades may be built up from the free edges obliquely to the sides of the rudder. The blades may be fastened to any part of a rudder or inverted or applied in one or more pairs, either way, or a rudder may be built up in the shape of blades, either wood or metal. The blades may be fastened to the sides of a rudder by metal bolts or screws, or any other mode of fastening. Slots may be made either in the blades or rudder to enable the former to slide up or down, according to circumstances, for adjustment or removal.

Having thus described the nature of my invention and the manner in which the same is to be performed, what I claim is—

The application or form of diagonal, curved, or oblique blades to rudders, substantially in the manner and for the purposes above described.

J. McGRIGOR CROFT, M. D.

Witnesses:

THOS. BROWN,

JOHN DEAN,

No. 17 Gracechurch St., London, E. C.

JOHN HARRISON,

No. 17 Gracechurch Street, London, E. C.