

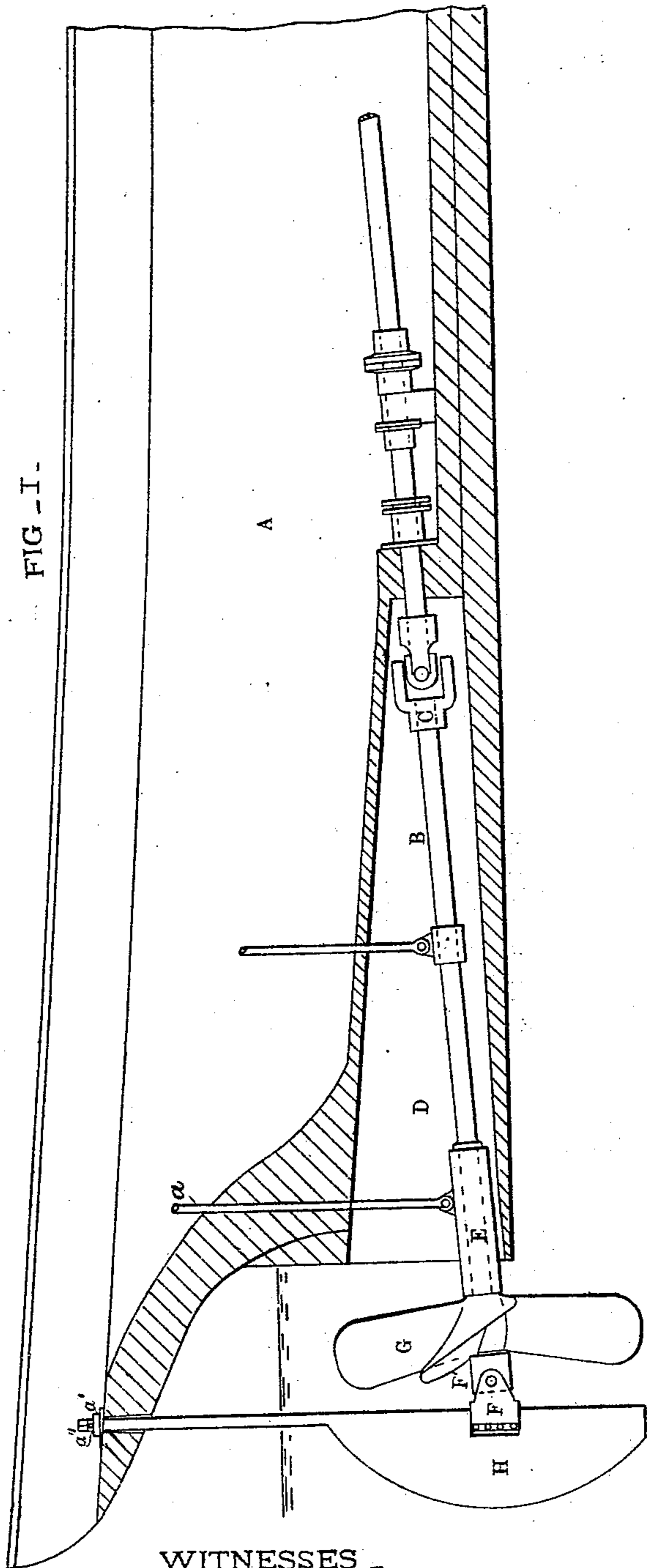
R. TYSON.

Means for Raising and Lowering Propellers.

No. 148,584.

Patented March 17, 1874.

FIG - I -



WITNESSES -

Joseph Cragg  
W. W. Wharton.

FIG - III -

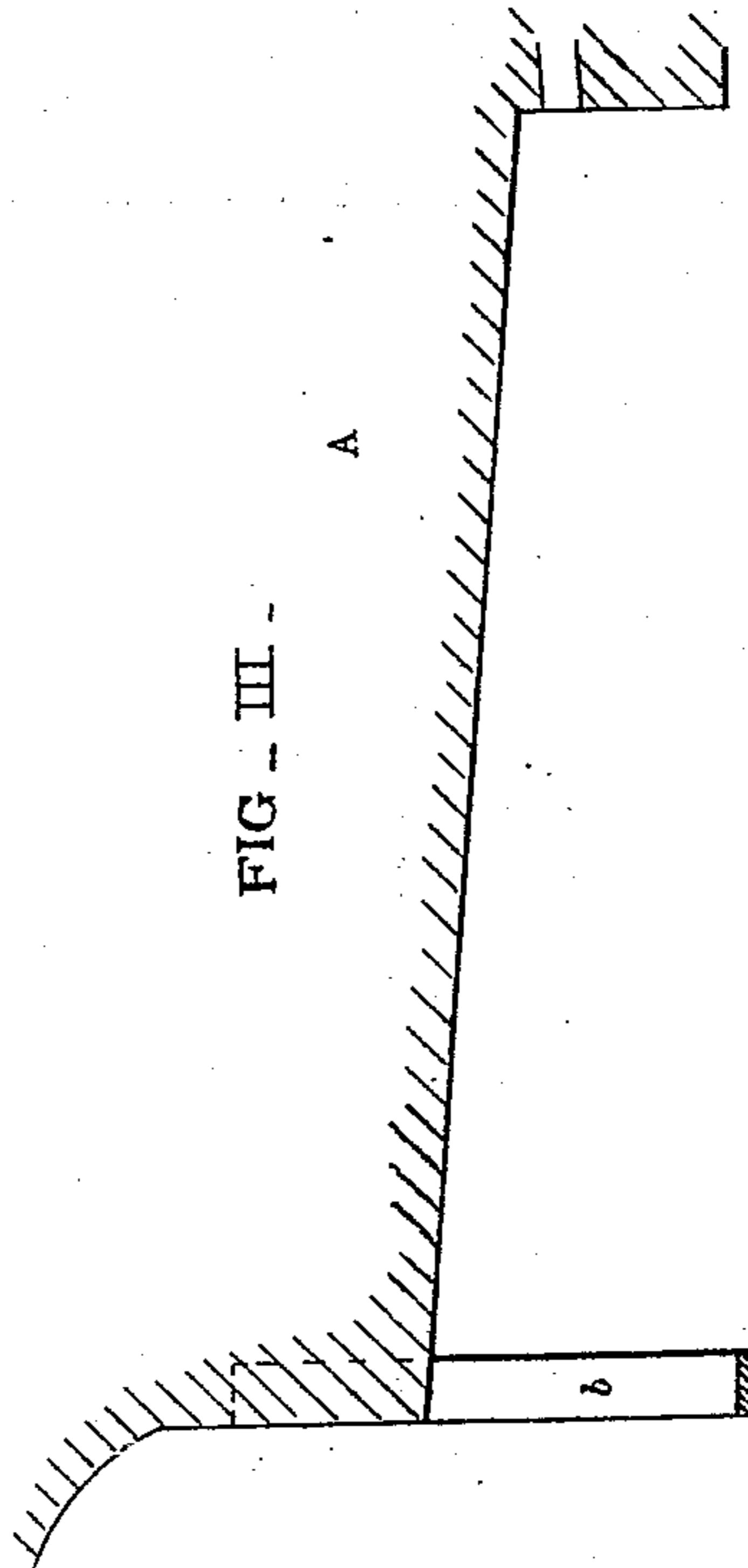
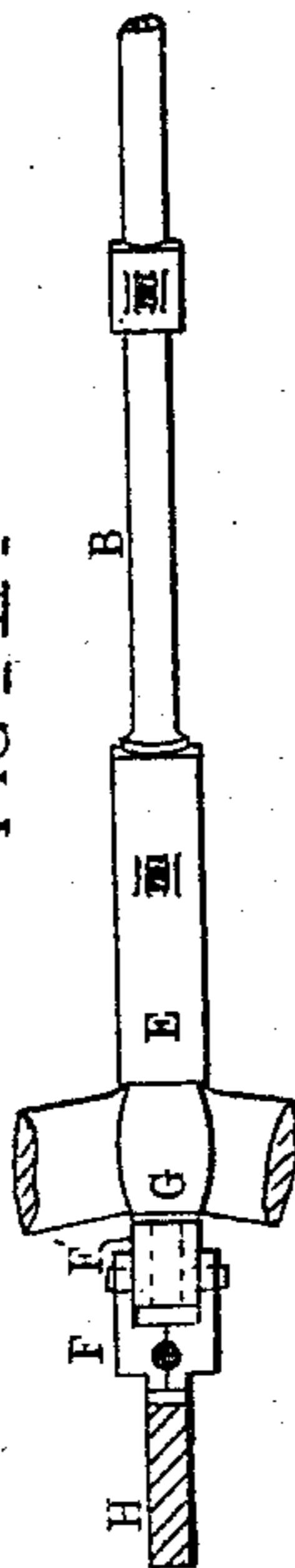


FIG - II -



INVENTOR -

Robert Tyson  
by G. H. & W. J. Howard.  
attys.

# UNITED STATES PATENT OFFICE.

ROBERT TYSON, OF BALTIMORE, MARYLAND.

## IMPROVEMENT IN MEANS FOR RAISING AND LOWERING PROPELLERS.

Specification forming part of Letters Patent No. **148,584**, dated March 17, 1874; application filed January 30, 1874.

*To all whom it may concern:*

Be it known that I, ROBERT TYSON, of the city of Baltimore and State of Maryland, have invented certain Improvements in Propeller-Shaft and Rudder Attachments, together with improvements in the stems of vessels, adapting them to receive the same; and I do hereby declare that in the following description of my invention is contained a full, clear, and exact description thereof, reference being had to the accompanying drawing, and to the letters of reference marked thereon.

My invention relates, first, to a connection between the said shaft and the rudder of the vessel, said connection allowing a vertical or curvilinear movement of the propeller and rudder; and, secondly, to means whereby the rudder-stock, when the propeller and rudder are placed in the desired position, is supported by the deck of the vessel. The object of my invention, briefly stated, is to render a vessel of light draft of water capable of receiving a propeller of larger diameter, and to give the propeller a deeper hold in the water than could be allowed under ordinary circumstances.

To fully understand the nature and object of my invention, it will be well to consider the advantages accruing from the use of large propeller-wheels in the propulsion of vessels; the advantages of having them as far as practicable below the surface of the water, and the difficulties that present themselves in adapting a wheel of an efficient diameter to a light-draft vessel. In proportioning a propeller-wheel, one of the principal objects sought to be attained is the utilization as far as possible of the power developed by the engine, and to do this the pitch or distance the wheel theoretically advances or recedes during one revolution should bear a certain proportion to the diameter. The wheel should, furthermore, be placed as far below the surface of the water as is practicable, so as to give complete and uniform resistance, and to prevent, in a heavy sea, what is technically known as "racing" of the engine. Difficulty is found, in light-draft vessels, in giving the propeller this necessary hold in the water, as the wheel cannot with safety project below the keel; and the projection of a considerable portion of the propeller-wings above the surface of the wa-

ter causes a large wheel thus projecting to be but little more efficient than a smaller wheel completely submerged.

To obviate these difficulties, I make the propeller or outer shaft adjustable, in such manner that the propeller and rudder can be raised or lowered to suit circumstances.

In the further description of my invention which follows, due reference must be had to the accompanying drawing, in which—

Figure 1 is a longitudinal section of the stern portion of a vessel having my invention attached thereto. Fig. 2 is a plan of the shaft, shaft-connections, and rudder. Fig. 3 represents a modification of the stern of the vessel.

Similar letters of reference indicate similar parts of the invention in all the views.

A represents the hull of the vessel. B is the adjustable propeller-shaft, connected to the remaining portion of the main engine-shaft by the universal coupling or joint C. D is a well formed in the dead wood of the vessel. E is the stern-bearing, adapted to slide in the well, and supported by the rod *a*, attached to suitable hoisting mechanism, by means of which the shaft is raised or lowered. Other bearings similar to E may be used, if found necessary, connected by rods to the hoisting machinery, for the purpose of distributing the hoisting strain. F F' is an adjustable bearing, connecting the propeller-shaft outside the propeller G with the rudder H. The peculiar construction of the bearing F F' allows the propeller-shaft to have a rotary motion independently of the rudder, and the rudder to swing or vibrate without affecting the end of the shaft, while a vertical movement of either gives a corresponding motion to both. The upper end of the rudder-stock is provided with a collar, *a'*, which, when the propeller is in the position indicated in Fig. 1, rests upon the deck. The collar is prevented from slipping on the stock by a pin, *a''*, passing through the stock above the collar. When the propeller is raised, the collar is moved down on the stock, so as to still rest on the deck, and secured by the pin being entered into another hole at the necessary point in the rudder-stock. In Fig. 1, the propeller is shown placed for deep water. When shoal water is reached, the propeller and rudder are hoisted until the

lowest point is slightly above the bottom of the keel. The modification shown in Fig. 3 is designed for use in vessels of lightest draft, and having short engine-shafts, and consists, as will be seen, in the entire removal of the well containing the shaft, and the substitution as a lateral support for the shaft of the brace *b*.

I make no claim to a jointed propeller-shaft, or to means, broadly, whereby a conjoined vertical or curvilinear movement is imparted to the propeller and rudder; but it is my object to simplify the connection between the propeller-shaft and rudder-stock, and principally to obviate the use of a rudder-shoe, which it is apparent is liable to become wedged fast to the hull of the vessel, rendering the whole arrangement of a variable-draft propeller and rudder unreliable.

Having thus described my invention, what I claim as new, and wish to secure by Letters Patent of the United States, is—

The outer end of a propeller-shaft, capable of a vertical or curvilinear movement, as set forth, coupling *F F'*, and rudder-stock and rudder *H*, adapted also to be adjusted vertically, when combined substantially as specified.

In testimony whereof I have hereto subscribed my name, in the city of Baltimore, this 27th day of January, in the year of our Lord 1874.

ROBERT TYSON.

Witnesses:

THOS. MURDOCH,  
WM. T. HOWARD.