(No Model.) 2 Sheets—Sheet 1.

H. P. HOLLAND.

MACHINERY FOR PROPELLING VESSELS.

No. 457,437. Patented Aug. 11, 1891.

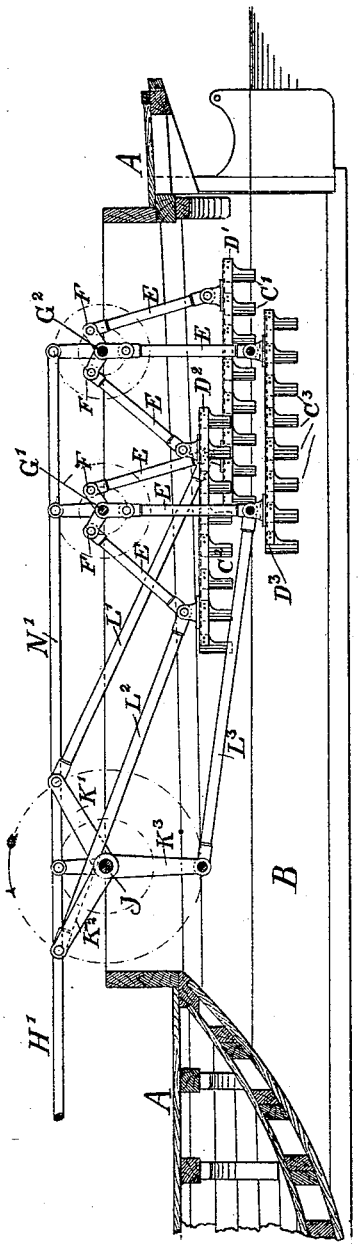

Fig. 1.

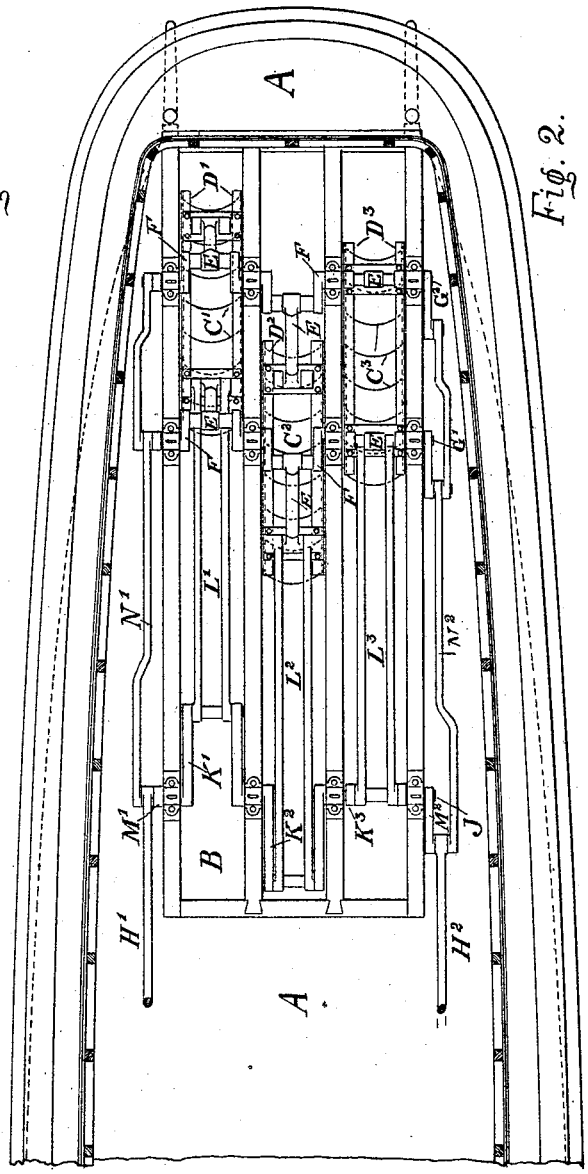

Fig. 2.

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B. N. Hill

Inventor:
Henry P. Holland
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John Richards

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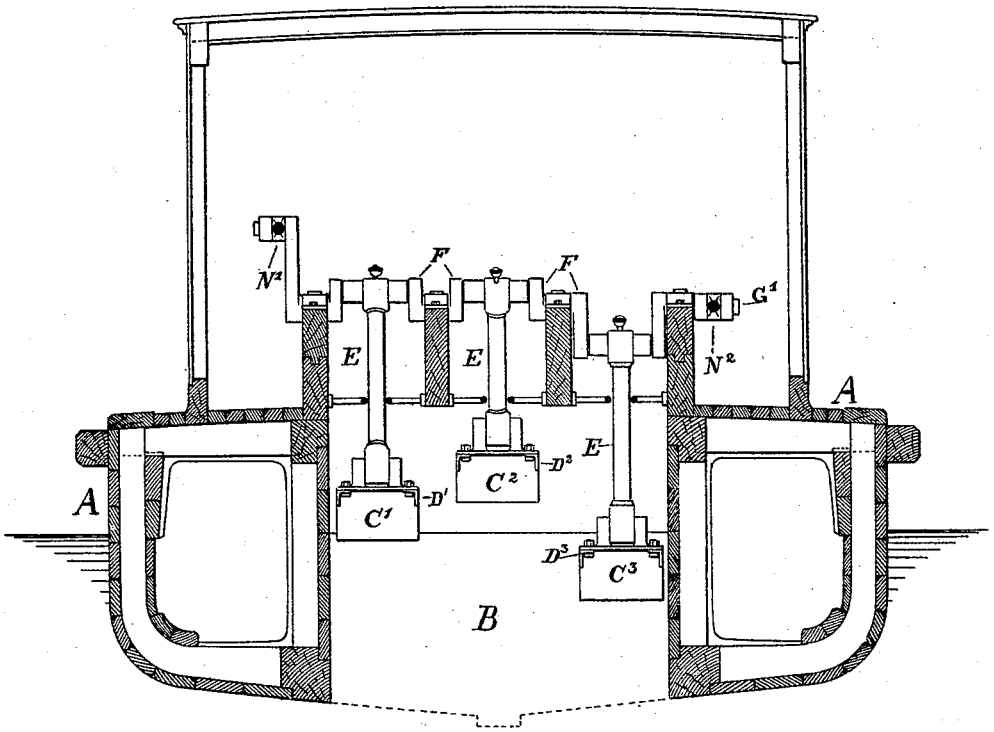

Fig. 3.

Witnesses
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Henry C. Holland
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John Richards

UNITED STATES PATENT OFFICE.

HENRY P. HOLLAND, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO JACOB A. FISCHER, OF SAME PLACE.

MACHINERY FOR PROPELLING VESSELS.

SPECIFICATION forming part of Letters Patent No. 457,437, dated August 11, 1891.

Application filed October 28, 1890. Serial No. 369,597. (No model.)

To all whom it may concern:

Be it known that I, HENRY P. HOLLAND, a citizen of the United States, residing at San Francisco, county of San Francisco, and State of California, have invented certain new and useful Improvements in Machinery for Propelling Vessels; and I hereby declare the following specification, with drawings accompanying, to be a full, clear, and exact description of the same.

This invention relates to the propulsion of vessels by means of floats or vanes impelled by steam or other power, acting mainly in the line of propulsion or in a horizontal plane arranged in series, and also in sections, so as to provide a large amount of propelling-surface and avoid the slip incident to wheel propulsion.

My invention consists in suspending sections of these vanes by means of links attached to cranks, so that the floats or paddles are buried in and lifted out of the water coincident with their reciprocating movement imparted by the driving-power, and in the various details to produce the horizontal and vertical movements required to attain a maximum resistance to the floats and consequent high efficiency of the power applied.

The method of constructing my invention and the method of its application to ordinary vessels are shown in the drawings, in which—

Figure 1 is a longitudinal section through the after portion of a vessel arranged to receive my improved propelling machinery, and a side view of the latter as it appears when mounted. Fig. 2 is a plan view of the same, showing the position and relation of the various parts of my improved propelling machinery in a horizontal plane. Fig. 3 is a transverse section across a vessel arranged to receive my improved propelling machinery, showing also the floats, links, and cranks by which the floats are suspended.

Similar letters of reference on the different figures indicate corresponding parts of the machinery.

Referring to Figs. 1 and 2, A is the after portion of a vessel constructed with a well or open section B, in which the propelling machinery is placed.

The floats are arranged in three sections C′, C^2, and C^3, fastened to the frames D′, D^2, and D^3, which are suspended at each end by means of the links E to the cranks F on the shafts G′ and G^2.

Driving-power is applied to the connecting-rods H′ H^2 and cranks I′ I^2 on the main shaft J. On this shaft are three cranks K′, K^2, and K^3, to which are attached the double propelling links or connections L′ L^2 L^3. These connections give the propelling or horizontal movement to the frames D′, D^2, and D^3 and the floats or paddles thereon. The vertical movement of the floats or paddles is performed in the following manner: To the main driving-cranks M′ and M^2 on the shaft J are attached connecting-rods N′ N^2. These rods N′ N^2 connect to similar cranks on the shafts G′ and G^2, so as to produce a coincident rotary movement of the three shafts J, G′, and G^2. The cranks F on the shafts G′ and G^2 are set at corresponding angles on each shaft and in such relation to the cranks K′ K^2 K^3 on the shaft J that on the backward or propelling stroke of the paddles they are buried in the water and on the return or forward stroke are lifted clear of the water, the movement being analogous to that of a common oar in rowing. By this mode of propulsion no power is expended in a vertical plane, as in the case of paddle-wheels, or in diverging angles, as in the case of screw-propellers, but only in the line of propulsion and transverse to the vessel's course.

My propelling machinery may consist of one or more sections of floats and be applied at the sides of a vessel the same as at the stern, and I do not limit myself to the arrangement shown in so far as attachment to or position in respect to the hulls of vessels; but

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a vessel having a suitable part wherein the propelling machinery is placed, of the floats secured to frames suspended by links to cranks on the shaft, the connecting-rods H′ H^2, together with the propelling links or connections L′ L^2 L^3, arranged to give the horizontal move-

ment to the float-frames, and the rods N′ N², connected to suitable cranks, in combination with other connections, so as to impart the vertical movement to the floats or paddles, substantially as described.

2. The combination of the floats C′ C² C³, secured to the frames D′ D² D³, suspended by the links E to the cranks F on the shafts G′ and G², the connecting-rods H′ H², connected to the main shaft J, having cranks K′ K² K³, the connections L′ L² L³, attached to said cranks and also to the float-frames, the connecting-rods N′ N², attached to the main driving-cranks M′ and M² on the shaft J, said rods connected to cranks on the shafts G′ and G², so as to produce a coincident rotary motion of the three shafts J, G′, and G², substantially as described.

3. The herein-described mechanism for propelling vessels, consisting in the combination, with the floats, their frames, suspension-links, and cranks F, said cranks being connected to the shafts G′ and G² at corresponding angles on each shaft, of the main shaft J, having the cranks K′, K², and K³, and the driving-cranks M′ and M², the rods N′ and N², pivoted to cranks M′ and M², and also to cranks on the shaft G′ and G², so as to produce a coincident rotary motion of the shafts J, G′, and G², and the connecting-rods L′ L² L³, pivoted to cranks K′ K² K³ and also to the float-frame, so that the several parts may operate in conjunction, substantially as described.

In testimony whereof I have hereunto affixed my signature in the presence of two witnesses.

HENRY P. HOLLAND.

Witnesses:
ALFRED A. ENQUIST,
W. D. BENT, Jr.