(No Model.) 2 Sheets—Sheet 1.

# J. HATFIELD & F. A. RIVERS.

## BOAT.

No. 598,089. Patented Feb. 1, 1898.

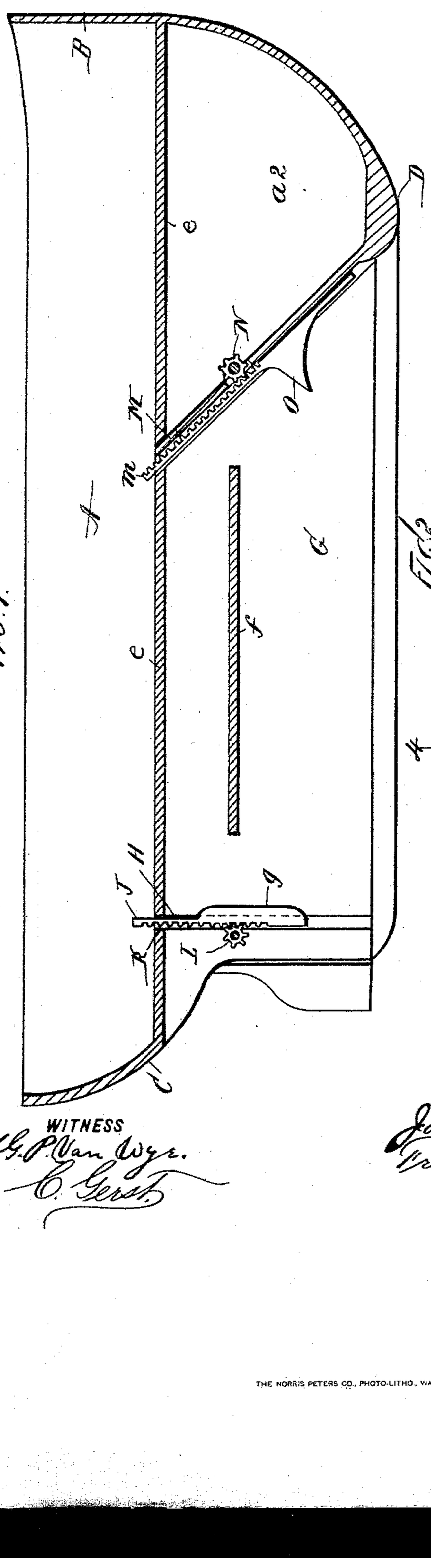


FIG. 1.

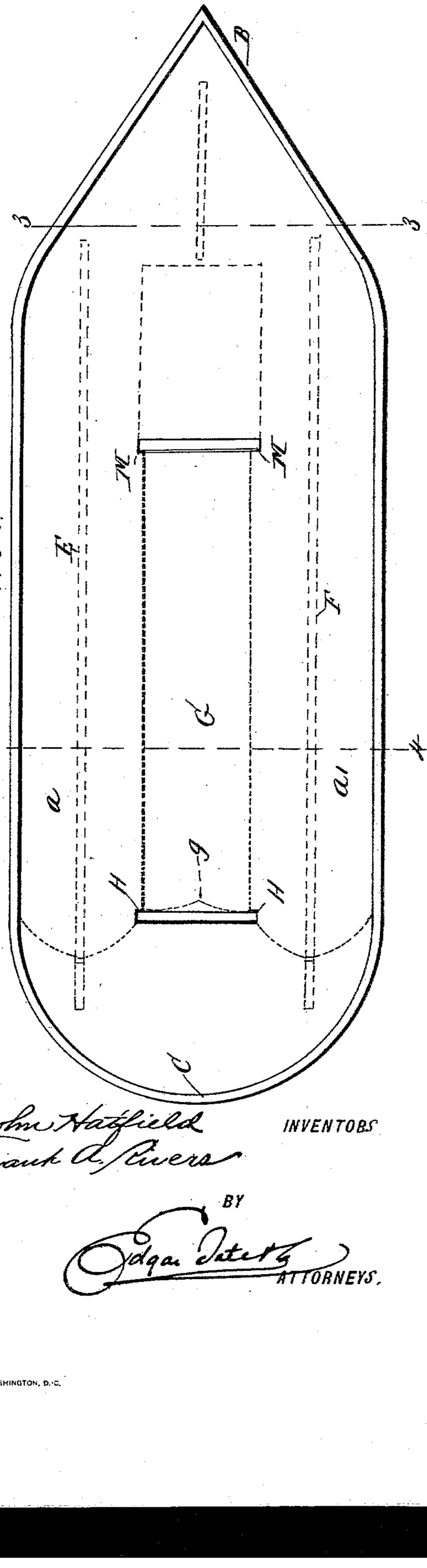


FIG. 2.

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(No Model.) 2 Sheets—Sheet 2.

# J. HATFIELD & F. A. RIVERS.

## BOAT.

No. 598,089. Patented Feb. 1, 1898.

FIG. 3.

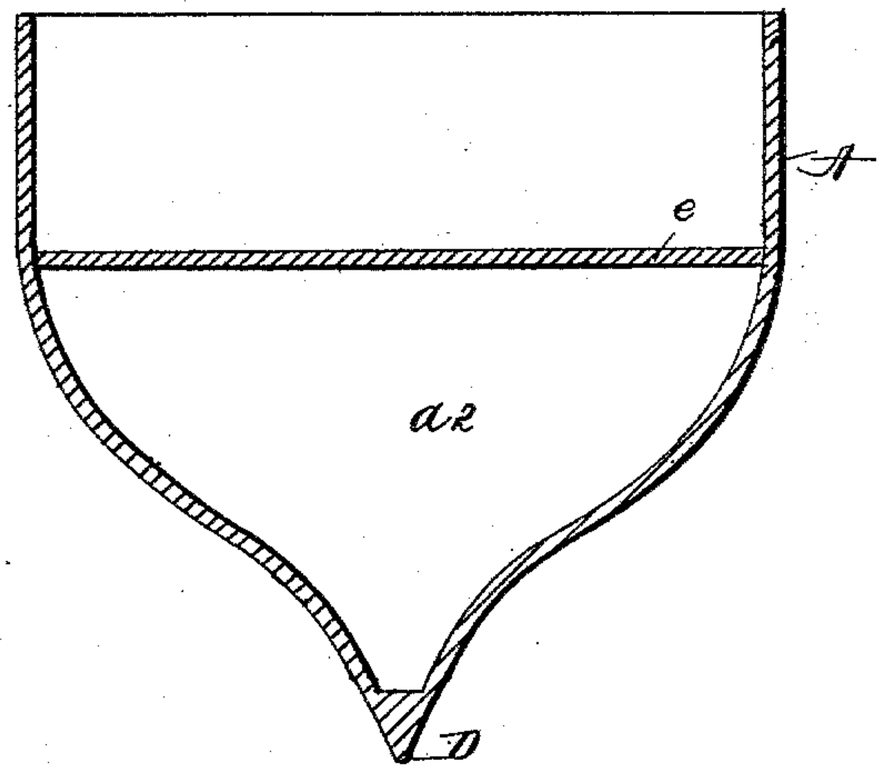
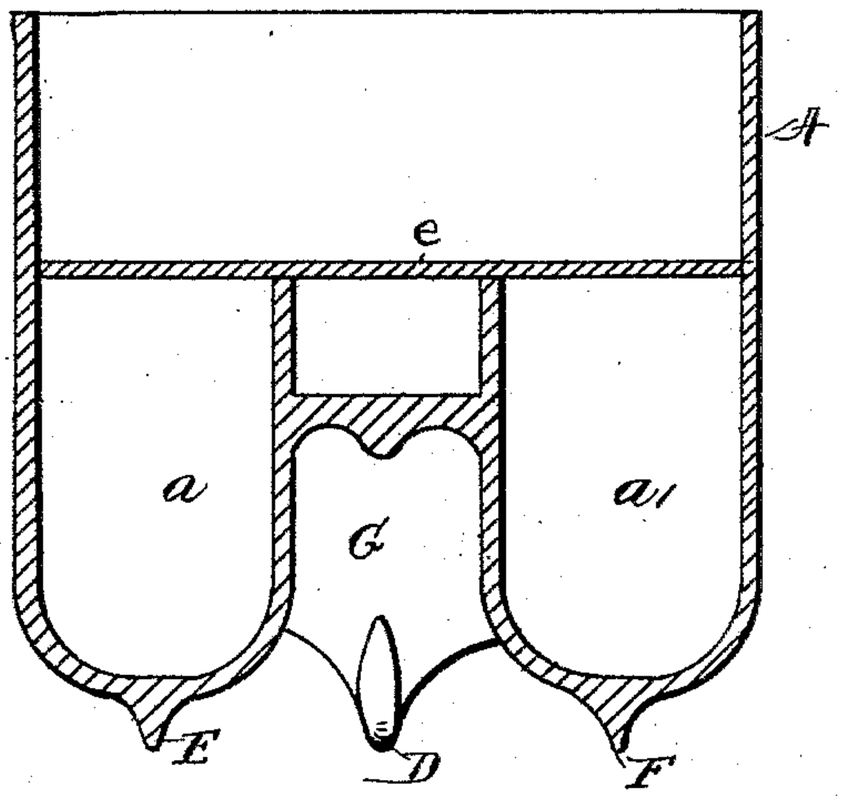



FIG. 4.




WITNESS
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# UNITED STATES PATENT OFFICE.

JOHN HATFIELD AND FRANK AUBREY RIVERS, OF BROOKLYN, NEW YORK.

## BOAT.

SPECIFICATION forming part of Letters Patent No. 598,089, dated February 1, 1898.

Application filed November 18, 1896. Serial No. 612,591. (No model.)

*To all whom it may concern:*

Be it known that we, JOHN HATFIELD and FRANK AUBREY RIVERS, citizens of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Boats, of which the following is a full and complete specification, such as will enable those skilled in the art to which it appertains to make and use the same.

Our invention relates to a center-channel paddle-boat which is adapted to be propelled by machinery and mechanism the idea of which is before the Patent Office under an application entitled an "Endless-chain oscillating paddle on a center-channel boat," which application was made by us on the same date as this case—to wit, November 18, 1896—and was given Serial No. 612,592.

In our device we have overcome many of the objections in boat-building and present now a construction which we believe will obviate all trouble and of which the following, when taken in connection with the accompanying drawings, is a full and clear description of our invention, such as would enable any one skilled in the art to clearly understand, construct, and use the same.

In the drawings similar letters refer to similar parts, in which—

Figure 1 is a vertical sectional view of a vessel, showing our invention. Fig. 2 is a plan view of the same, showing in particular the central channel in which the means for propulsion are to be secured. Fig. 3 is a section on the line 3 3 of Fig. 2, and Fig. 4 is a section on the line 4 4 of Fig. 2.

A represents the hull of a boat having a bow B, formed in any manner or improved style, and tapering downwardly and backwardly therefrom is a central keel D, which extends downwardly as far as the side keels, hereinafter described, and then curves upwardly therefrom, covering in length approximately one-fourth of the length of the vessel from the bow. Running from the keel D, and on either side of the same, are other keels E and F, (shown in dotted lines in Fig. 2 and in section in Fig. 4,) which extend from the forward part of the boat adjacent to the keel D to the stern of the vessel. In rear of this keel the boat is divided similar to a catamaran or, in other words, formed into two distinct hulls *a* and *a'*, each having, respectively, on the lower side thereof the aforesaid keels E and F, the said hulls being secured together by decks *e*, one of which is shown in section in Figs. 1, 3, and 4, and said boat being also provided with a stern C. It is to be understood, however, that the vessel does not represent a catamaran in its entire construction, for the bow, formed like any other boat, is provided with a main hull $a^2$ and two hulls in connection therewith, as clearly shown.

The space left between the two hulls forms a center channel G, and there may be placed therein means or machinery for propelling the vessel, as may be desired, while at the rear portion of this channel are grooves H H, in which is mounted a sluice-gate J, carrying on the rear face of the same a rack K, which is operated by a gear-wheel L, moved and turned by suitable means in the vessel, and which is here not shown. This sluice-gate is adapted to be kept at a point which is above the water-line of the boat and prevents any back waves from getting into the machinery, while it may, on the other hand, have formed on the forward side of the same a miniature bow *g*, thus allowing it to pass freely through the high waves or spray which might be thrown up against the same.

The channel G extends forwardly at a determined distance, and the sides have formed in the same at the forward end thereof grooves M M in communication with the said channel similar in size to those H H, formed in the rear of the said channel, while the forward end of this channel slopes downwardly and forwardly, gradually emerging into the central keel D, hereinbefore described. Mounted in the grooves M and M is a rack-bar *m*, adapted to move upwardly and downwardly by means of a gear-wheel N, meshing with the same and operating in the manner similar to that of the sluice-gate. On the rear face of this bar is formed a breakwater O, having its lower face concave, as is clearly shown in Fig. 1, thus allowing the water as it comes rushing up from the back of the keel F to be guided downwardly in a strong current and with little liability of rushing

against the propelling mechanism mounted in said channel before it gets down into the water.

The construction thus described is one which clearly, as hereinbefore mentioned, obviates all danger of settling or rolling in case of running aground, as the double keel would allow the vessel to be held upright, while, on the other hand, it would prevent a great amount of rolling and tossing in a storm, thus providing great comfort to the passengers; and in this kind of vessel great accuracy of firing in men-of-war would be attained, and it would be practically a non-sinkable boat, and there would be less strain, as there would be no part of the propelling mechanism of the vessel exposed to the action of the waves during a storm, as is the case in the present construction. In addition to these advantages it will be seen that greater space may be provided for carrying passengers in proportion to the draft of the vessel, and hence there would be a universal use of this construction in boat-building in all styles of navigation—marine, lake, river, or stream.

Having now described our invention, what we claim as new, and wish to protect by Letters Patent, is—

1. A center-channel paddle-boat having a bow, a central keel secured to the lower portion thereof, two hulls formed in the rear portion of the said vessel and in connection with said bow, a center channel formed between said hulls, means secured therein for guiding all wave current, all of the said parts being combined substantially as and for the purposes set forth and described.

2. A center-channel boat having a bow, a central keel in the lower portion thereof and extending backwardly a predetermined distance, a downwardly and forwardly projecting wall emerging into said keel, a center channel formed in the said boat, hulls on either side thereof, said hulls being provided with grooves on their inner faces in communication with the said center channel, a sluice-gate mounted in said grooves and the rear portion of said channel, means for operating the same, and a breakwater secured to the said downwardly and forwardly projecting wall, all of the said parts being combined substantially as and for the purpose set forth and described.

3. A vessel having a bow, a keel secured to the forward portion of the same and extending backwardly and upwardly therefrom, hulls formed on the rear portion of said bow, and extending backwardly, forming therebetween a center channel, and being provided in the inner side thereof and in connection with said center channel with vertically-extending grooves at each end of the same, a sluice-gate mounted in said rear grooves and adapted to be adjusted vertically, a rack-bar secured to the rear upper face of said gate, a gear-wheel mounted in said boat and adapted to actuate said rack-bar, a second rack-bar mounted in the forward portion of said boat and in the remaining of said grooves, a breakwater having a concaved lower curved face and secured to the rear face of said bar, means for operating said bar, and keels secured to said vessel, and extending longitudinally along the lower portion of said hulls, all of the said parts being combined substantially as and for the purposes set forth and described.

In testimony that we claim the foregoing as our invention we have signed our names, in presence of the subscribing witnesses, this 13th day of November, 1896.

JOHN HATFIELD.
FRANK AUBREY RIVERS.

Witnesses:
THOS. A. ACTON,
CHARLES S. ROGERS.