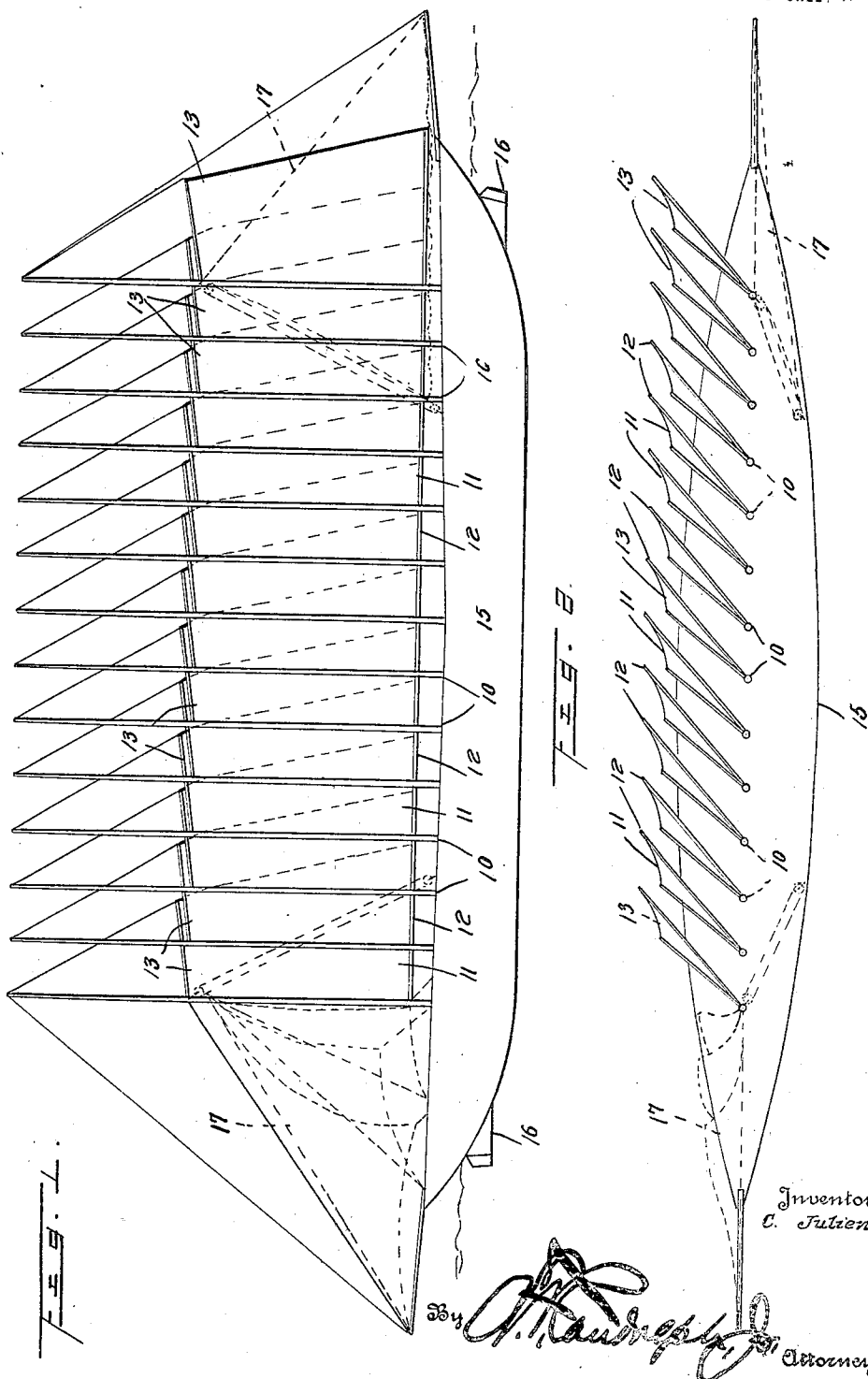


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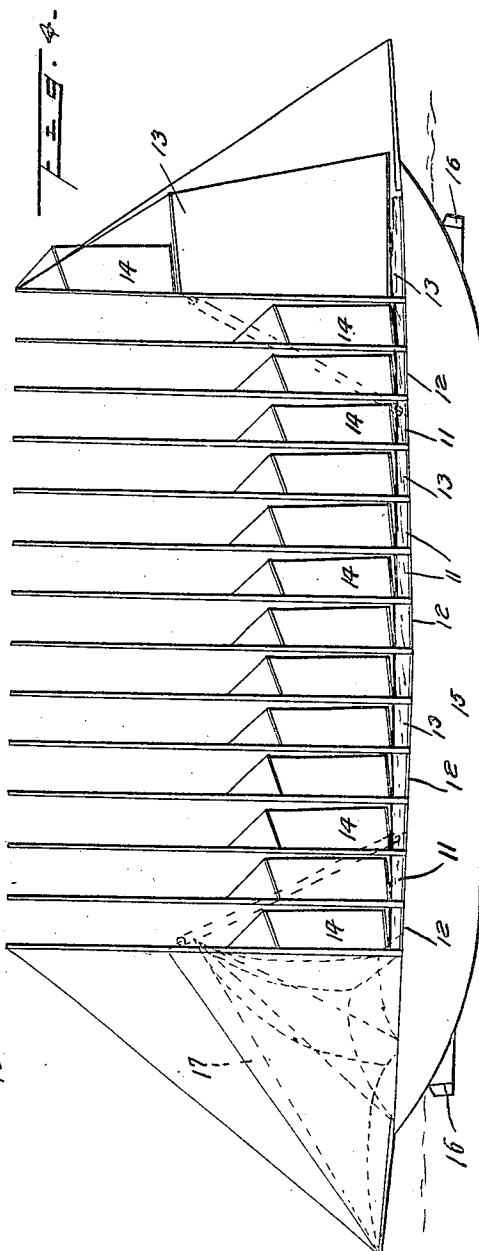
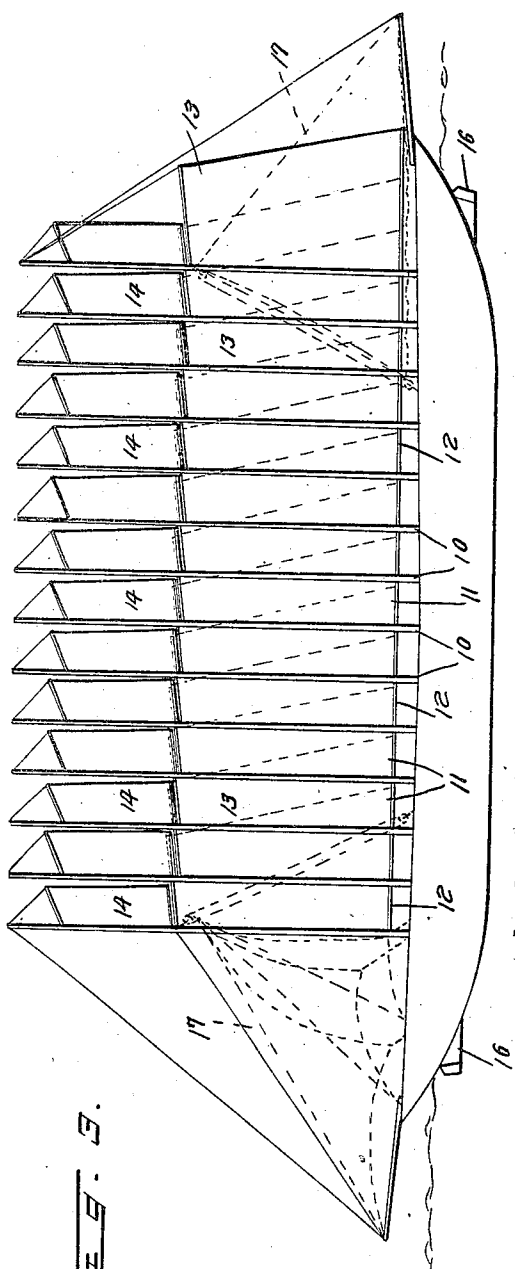
3 SHEETS—SHEET 1.



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3 SHEETS—SHEET 2.



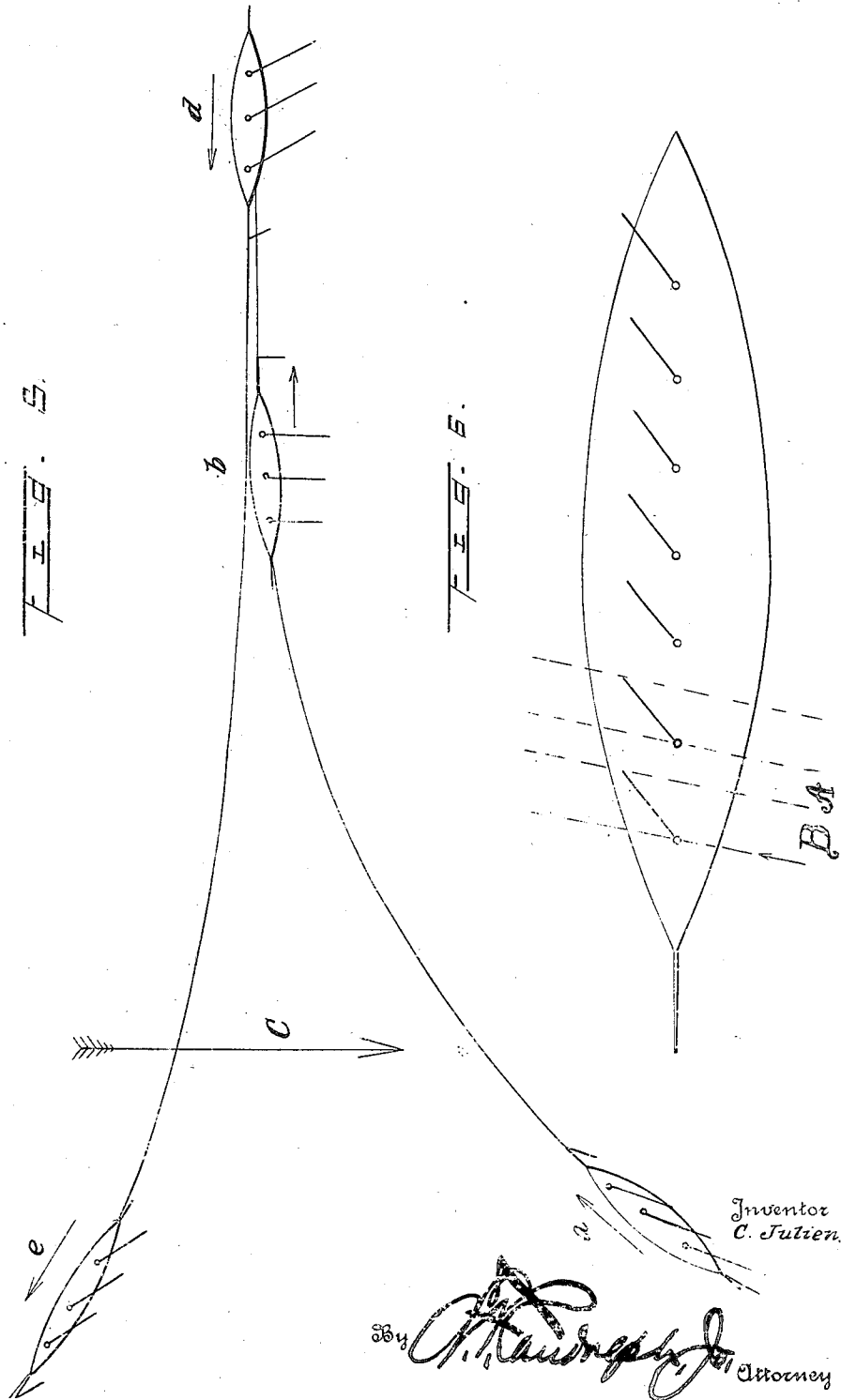
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UNITED STATES PATENT OFFICE.

CHARLES JULIEN, OF JERSEY CITY, NEW JERSEY.

RIGGING FOR SAILING VESSELS.

1,379,573.

Specification of Letters Patent.

Patented May 24, 1921.

Application filed November 19, 1920. Serial No. 425,206.

To all whom it may concern:

Be it known that I, CHARLES JULIEN, a citizen of the United States, residing at Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in a Rigging for Sailing Vessels; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The object of the invention is to improve the sailing capacity or the velocity of sailing vessels particularly pleasure and racing craft without modifying or detracting from the stability thereof, and more particularly to increase the spread of canvas or the sail area proportionate to the size of the vessel with the special purpose of utilizing more completely the wind pressure so that a vastly increased sailing efficiency can be secured in light winds which with the ordinary plan of rigging are insufficient to provide for any practical progress of the craft; and with these objects in view the invention consists in a construction and combination of parts of which a preferred embodiment is shown in the accompanying drawings, wherein:

Figure 1 is a side view of a vessel rigged in accordance with the invention.

Fig. 2 is a plan view of the same.

Fig. 3 is a side view showing the improved main sail rigging supplemented by top sail rigging for added wind effect as in the ordinary practice.

Fig. 4 is a view showing the top sail rigging lowered as when tacking in the ordinary way in a relatively narrow path or channel.

Fig. 5 is a diagrammatic plan illustrating the operation of a vessel rigged in accordance with the invention in tacking.

Fig. 6 is a plan view in outline of a vessel provided with a main sail rigging or arrangement as in the ordinary practice to illustrate the waste of wind pressure under those circumstances.

Whereas in the approved present forms of rigging for sailing vessels the fore and aft spacing of the masts and the dimensions of the main sails are such that the booms of the main sails will swing through the spaces between adjacent masts so as to adapt them to be arranged either on the port or the star-

board side of the vessel, the present invention contemplates the reduced spacing of the masts fore and aft, as shown at 10, and the consequent increase in the number thereof, and the increased width of the main sails 11 and length of the booms 12 so that the latter are of a length equal to a multiple of the distance between adjacent masts while the former are of a width to secure an overlapping relation of adjacent main sails, to the end that with the wind on the fore quarter, and with the sails set in planes bisecting the angle between the axial center of the vessel and the direction of the wind, each sail will overlap transversely the sail in rear thereof, or will overlap the sail in rear thereof on the line of movement of the wind, instead of leaving open spaces for the ineffective passage of the wind as indicated at A in Fig. 6, which shows the ordinary arrangement of rigging where the main sails are adapted to swing through the spaces between adjacent fore and aft masts. In other words the extension of the width of the main sails in accordance with the principle of this invention serves to stop the gap between adjacent sails as arranged in the ordinary practice, to utilize that portion of the wind pressure which ordinarily passes between the sails and produces no effect in propelling the vessel.

Obviously this arrangement of the main sail rigging provides for reducing the height or length of the sails while still increasing the area thereof, inasmuch as by increasing the width by fifty percent., so that the boom 12 is of a length equal to three times the distance between adjacent masts, and reducing the height or length by one third, a greater sail spread is secured and any increased tendency of the vessel to list under the wind pressure due to the increased sail spread is compensated for the lowering of center of pressure, so that in actual practice it is found that the list of the vessel rigged as herein described is substantially the same or in other words does not exceed that of vessels rigged in accordance with the usual plan.

The gaffs or yards 13 of the main sails are preferably of a length equal to twice the distance between adjacent masts as indicated in Figs. 1 and 3, and as shown in Fig. 4 the top sails 14, which may as shown in Fig. 3 be used in the usual relation with the main

sails, may be lowered when the main sails are not in use, the spars of the top sails preferably being of a length permitting of the swinging movement thereof between adjacent masts, so that in rough weather or when it is desired to tack or progress against the wind in the ordinary way, the top sails lowered as shown in Fig. 4 may be used for this purpose.

10 Owing to the fact that the main sails cannot be swung through the spaces between the adjacent masts, it is necessary for purposes of tacking or progressing against the wind, to employ a vessel hull 15 which, like the ordinary form of whale boats, is double ended to adapt it to progress in either direction, the same being provided at each end with a rudder 16, one of which may be locked in longitudinal position when that end of the vessel is being used as the prow. In the same way the jib rigging indicated at 17 may be duplicated at opposite ends of the vessel, the jib sails at the end which is serving as the stern being furled or let down 25 during the time that the vessel is progressing in the opposite direction.

In tacking the vessel instead of being brought up bow into the wind as in the ordinary practice is turned the other way, or in other words is brought broad side or beam 30 end to the wind, the main sails being swung from a quartering position to one end of the hull to a quartering position toward the other end as will readily be seen by reference to Fig. 5, the intermediate position of the sails being directly abeam. Referring to said Fig. 5 it will be seen that the vessel indicated at *a* is progressing in the direction indicated by the arrow on the starboard 35 tack and when it reaches the position *b* the sails are permitted to swing free so as to lie in the plane of movement of the wind which is indicated by the arrow *c*, and then the sails are drawn toward the end of the bolt which previously represented the

bow as indicated at *d*, to take the wind on the other side and start on the port tack as shown at *e*.

With the arrangement described it will be obvious that all portions of air traversing 50 the hull of the vessel transversely within the area determined by the height of the sails will be utilized in pressure upon the sails, instead of only a fraction of the wind pressure being utilized as in the diagram of Fig. 55 6 where the proportion of the volume of wind utilized and as indicated by the space marked B, is only slightly greater than that which is wasted or lost by reason of passing the sails to leeward without coming in contact with any portion of the sail surface. 60

Having thus described the invention, what I claim is:—

1. A rigging for sailing vessels wherein the main sails are arranged in fore and aft 65 overlapping relation.

2. A rigging for sailing vessels wherein the main sail booms are of a length equal to a multiple of the fore and aft distance between adjacent masts. 70

3. A rigging for sailing vessels wherein the masts are arranged at a reduced fore and aft spacing with each mainsail of a width overlapping a plurality of consecutive sails.

4. A rigging for sailing vessels having 75 main sails of a width exceeding the fore and aft distance between the masts, and top sails of a width less than the fore and aft distance between the masts.

5. A rigging for sailing vessels wherein 80 the main sails when on the quarter are of a lower boom width sufficient to span fore and aft a space equal to a multiple of the distance between successive masts.

In testimony whereof I affix my signature 85 in presence of two witnesses.

CHARLES JULIEN.

Witnesses:

LEOPOLD BAUMAN,
OSCAR H. FREEMAN.