

M. F. DAVIS.
BOAT.

(Application filed May 10, 1899. Renewed June 9, 1900.)

(No Model.)

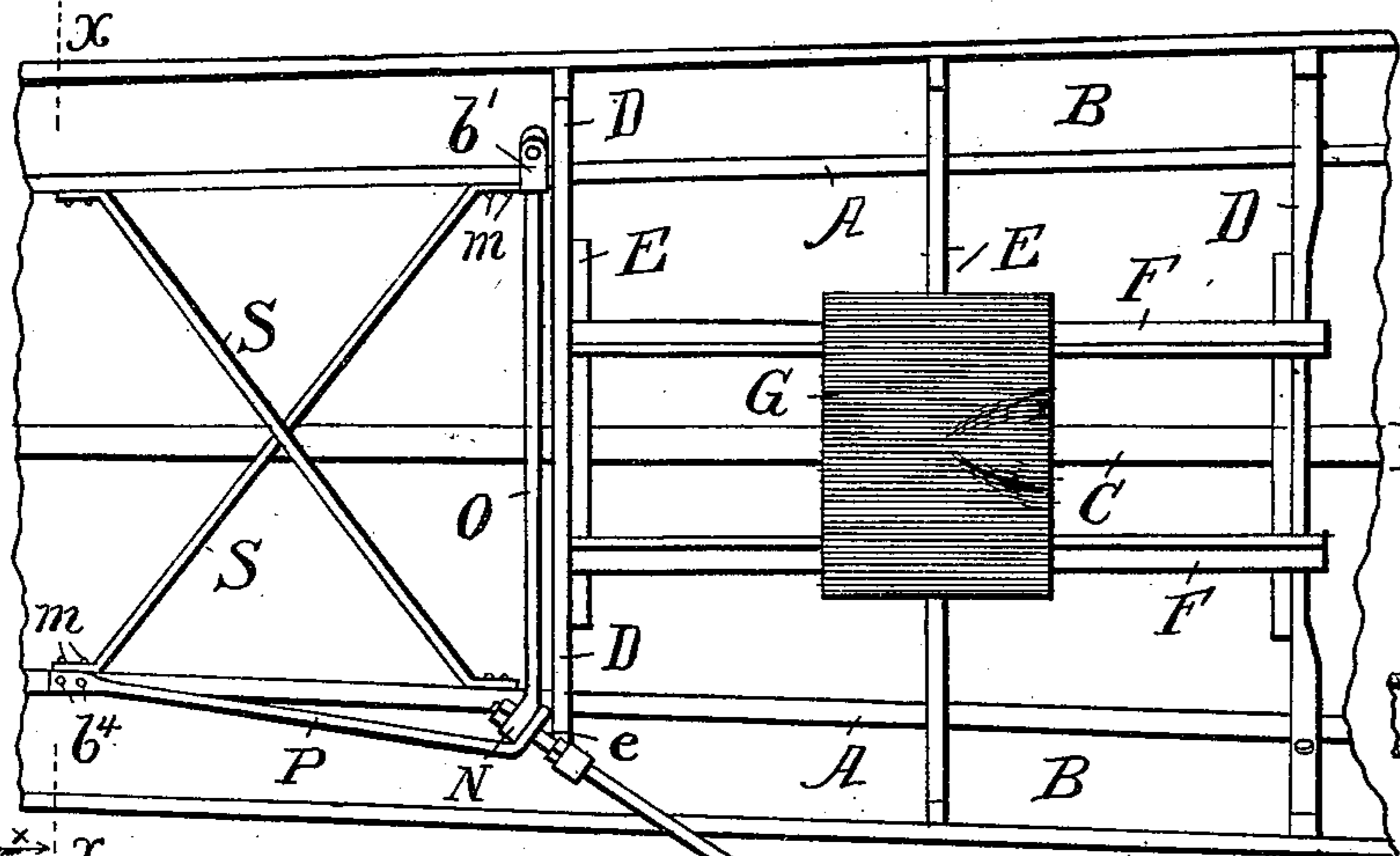


Fig. 7.

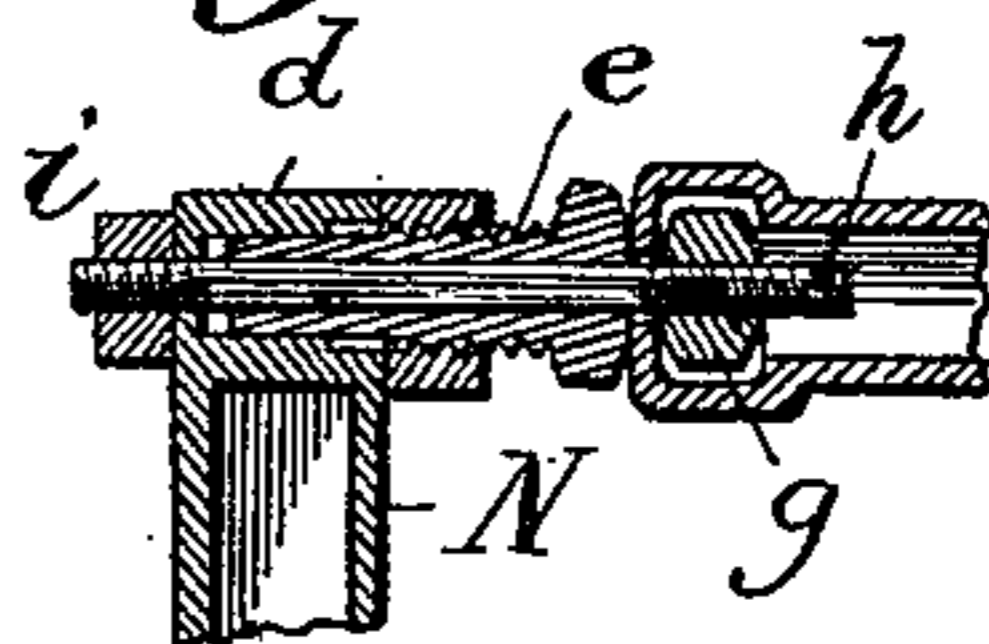


Fig. 1.

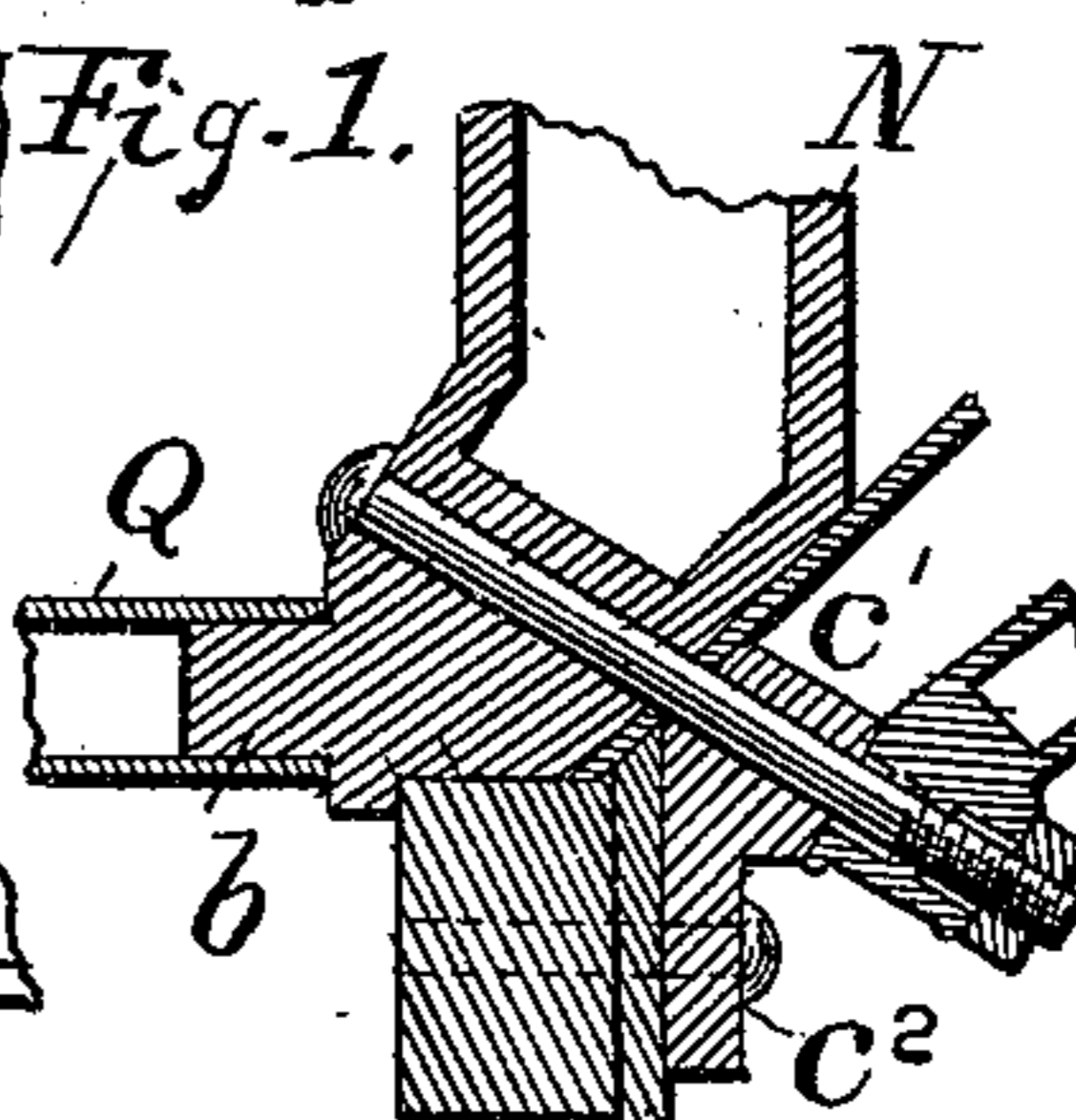


Fig. 8.

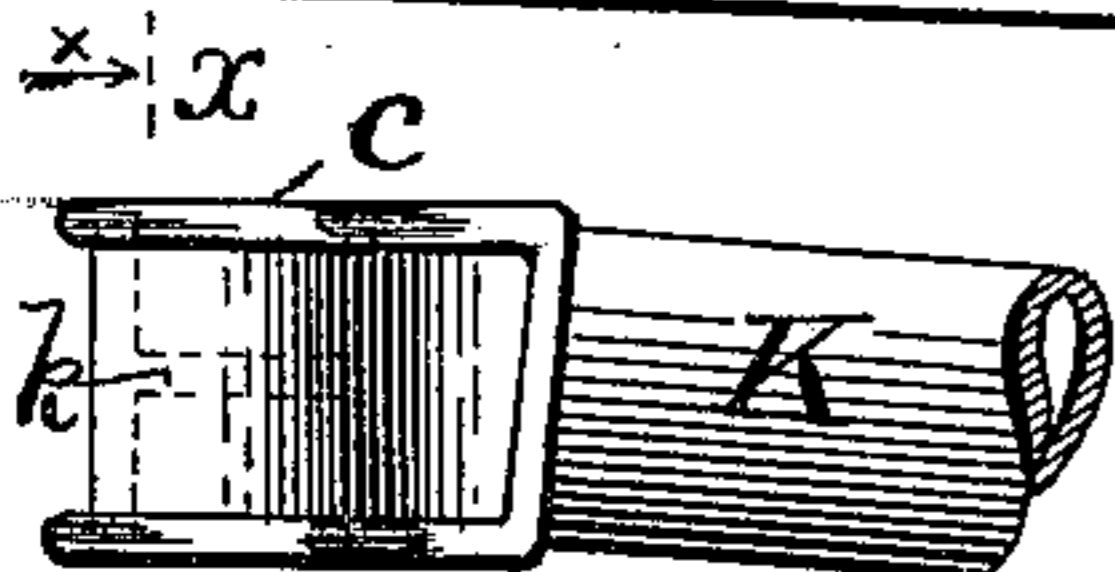


Fig. 5.

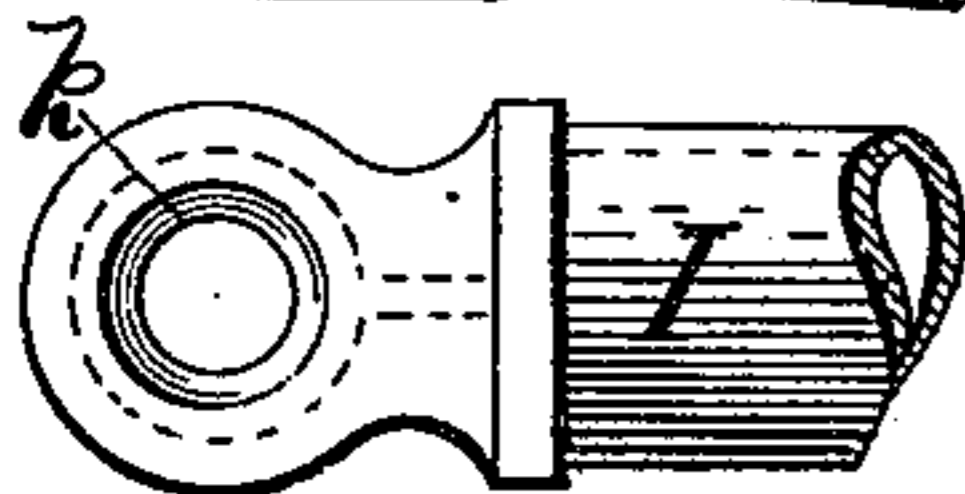


Fig. 6.

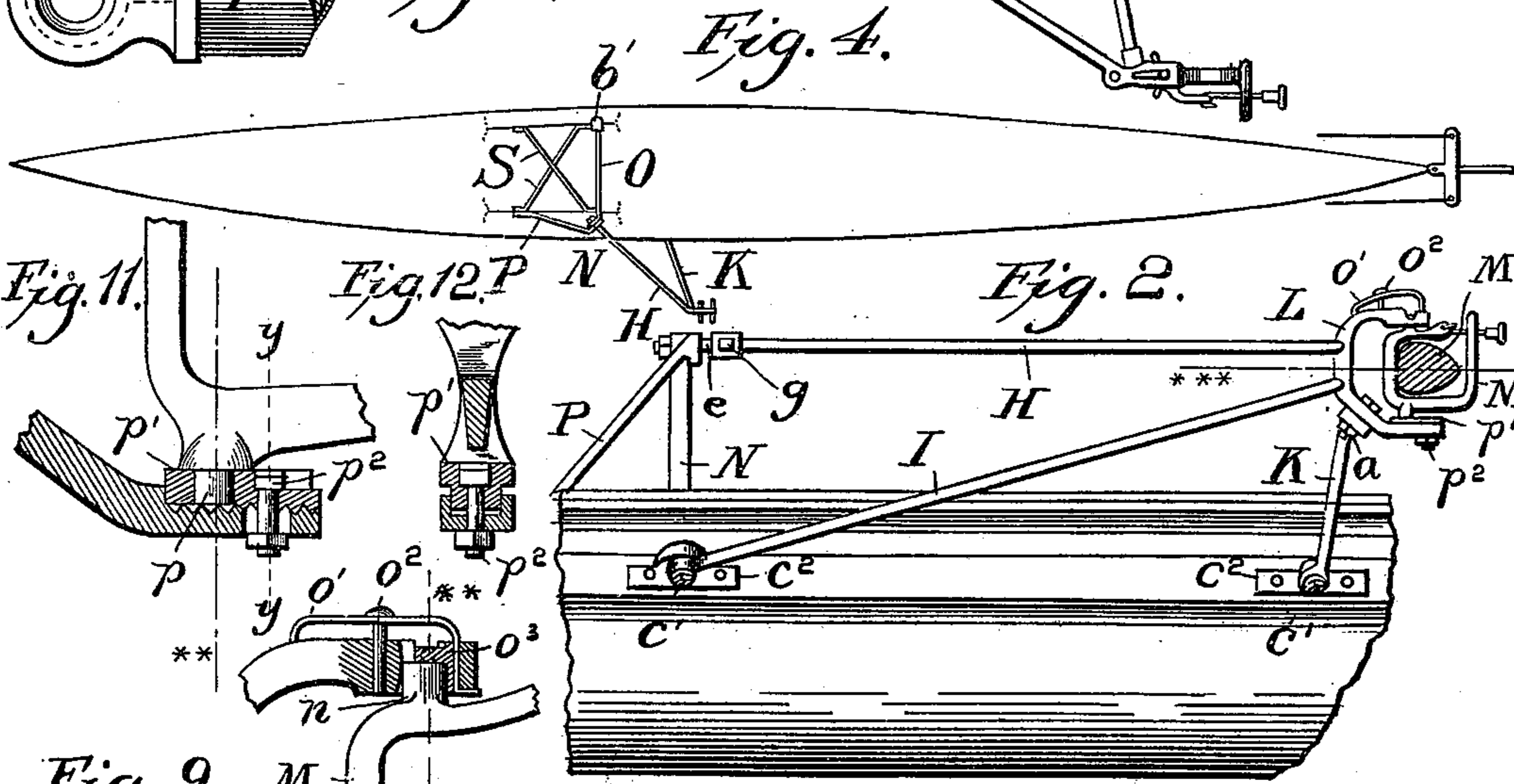


Fig. 11.

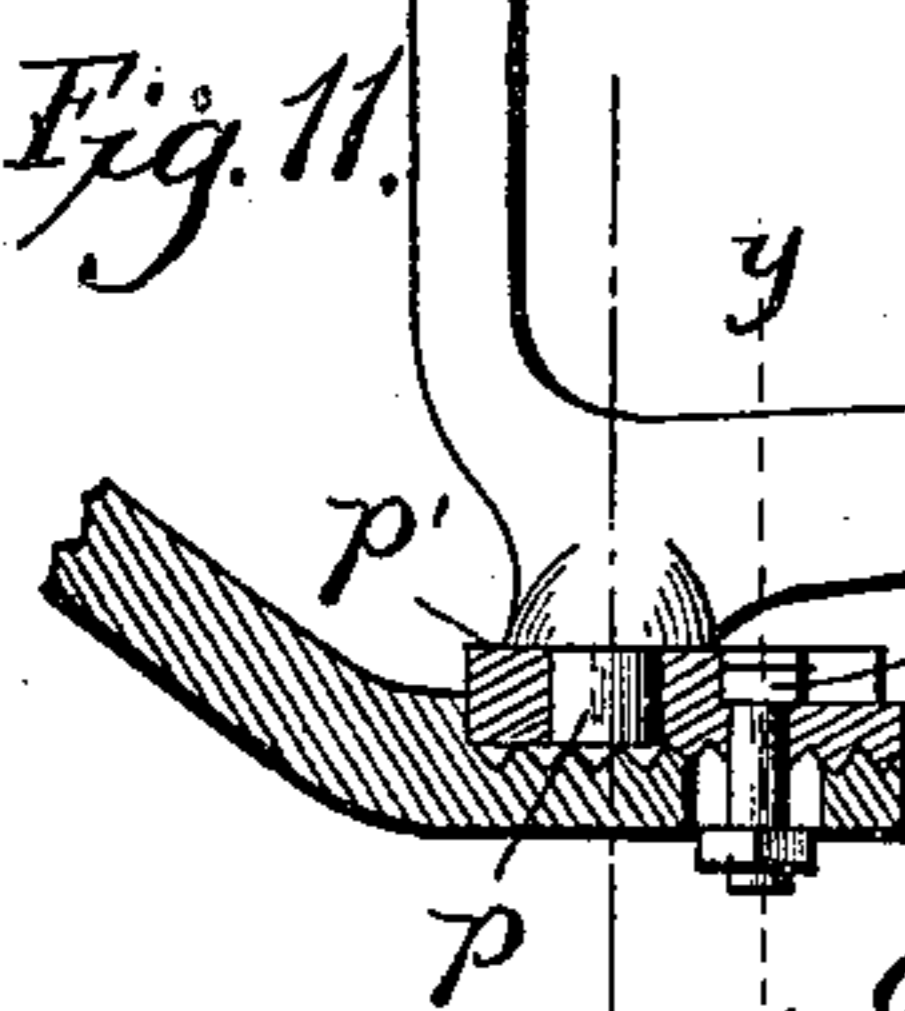


Fig. 12.

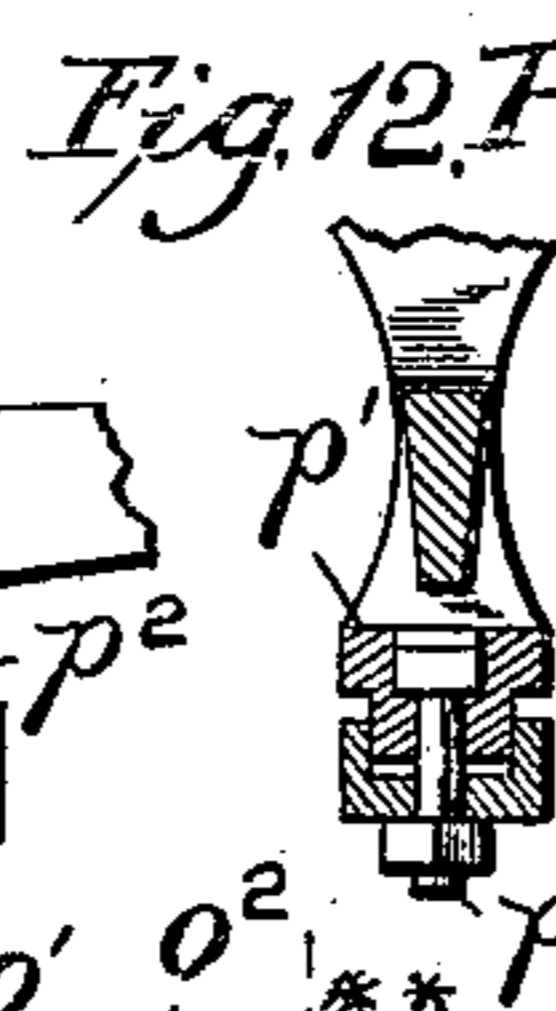


Fig. 9.

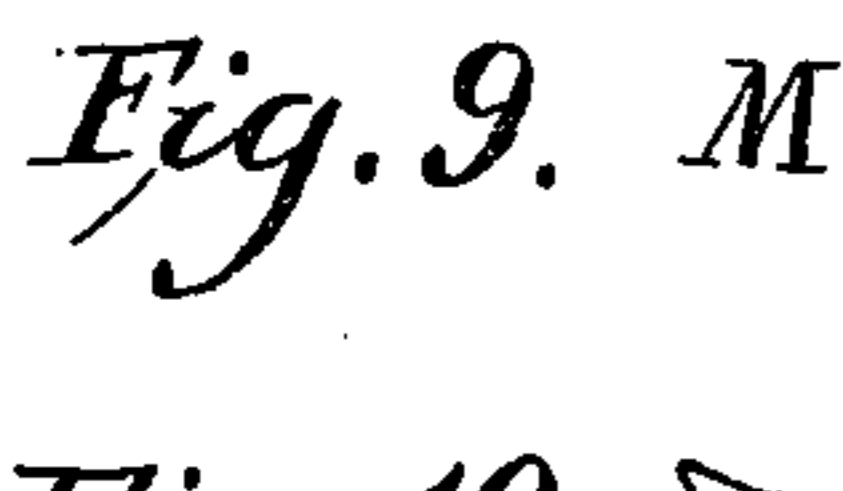
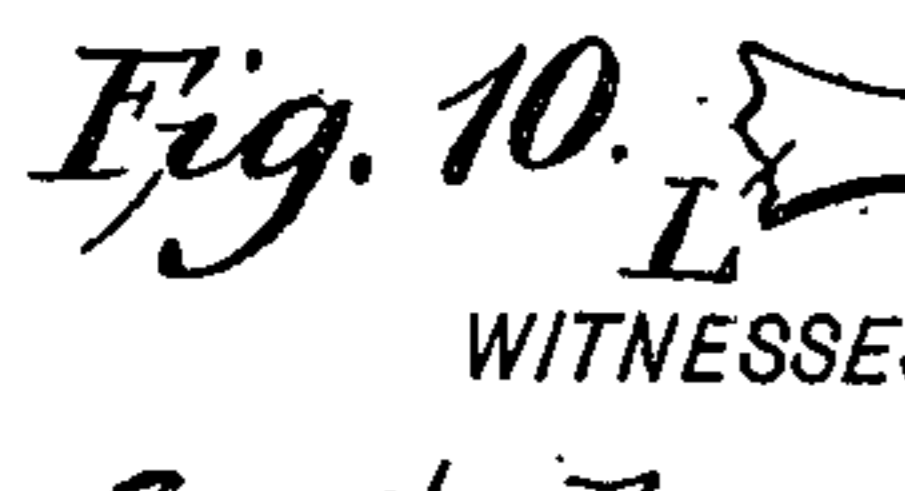


Fig. 10.

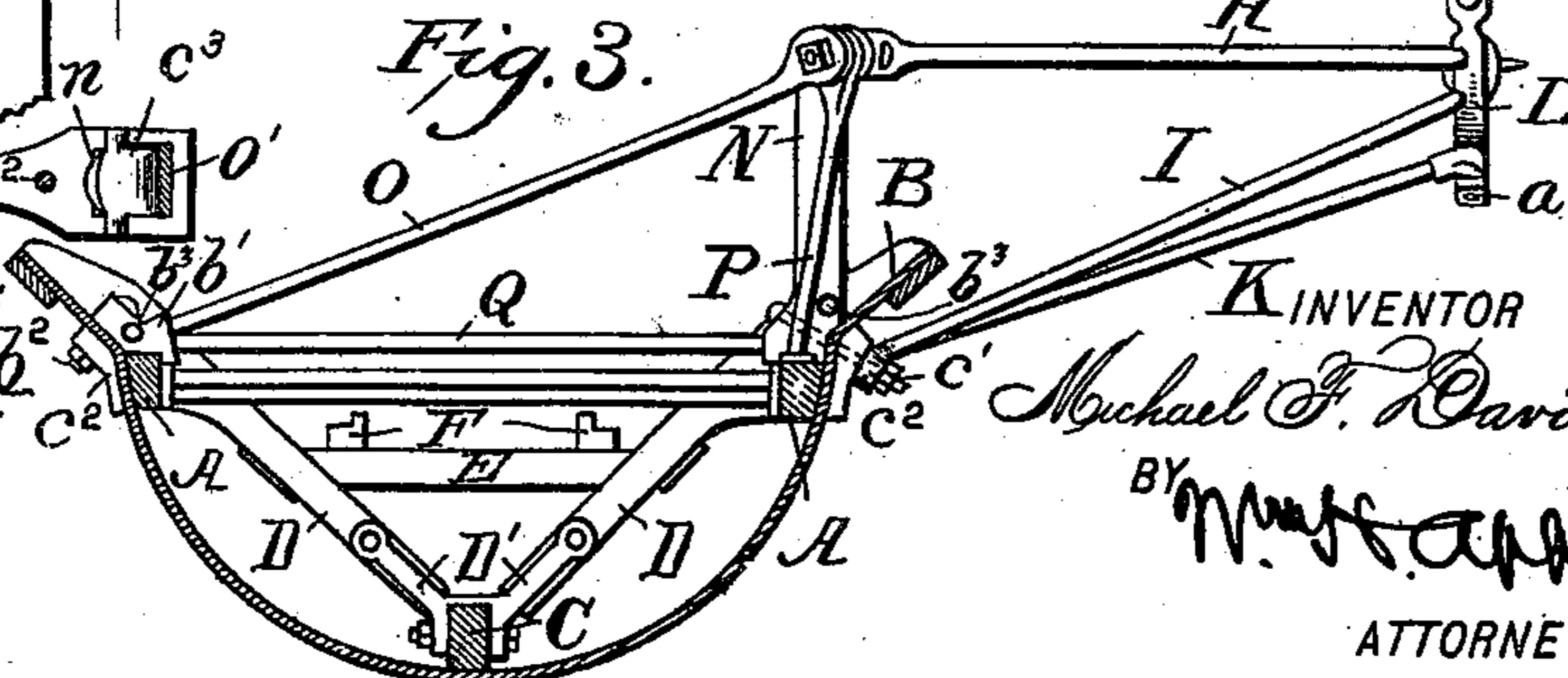


WITNESSES:

C. H. Twist.

A. F. Sweeney.

Fig. 3.



K INVENTOR

Michael F. Davis.

BY Messrs. Appleton

ATTORNEYS

UNITED STATES PATENT OFFICE.

MICHAEL F. DAVIS, OF NEW YORK, N. Y.

BOAT.

SPECIFICATION forming part of Letters Patent No. 665,410, dated January 8, 1901.

Application filed May 10, 1899. Renewed June 9, 1900. Serial No. 19,789. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL F. DAVIS, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Boats, of which the following is a specification.

My invention, while relating generally to boats of the pleasure class, has reference more particularly to those forms thereof which are known to the art as "shells" and are employed more especially in racing. In the construction of boats of this class it is a desideratum, as is well known, to make them as light as is possible consistent with the required strength, and to this end and with a view to the production of finer lines the breadth of beam thereof is so reduced as to require that the oar-locks be supported outward some distance from the gunwales of the boat on what are known to the art as "outriggers." These outriggers are usually made of small rods or tubes, which are provided at their inner ends with ears, by means of which and suitable bolts they are secured to the sides of the boat or the wash-box thereof and extend outward therefrom to the proper distance either in the form of an isosceles triangle, with its apex slightly truncated, or else in the form of the altitude and hypotenuse of a right-angle triangle, with the apex of its outer angle in like manner removed. When the first of these forms are employed, four rods or tubes are usually made use of, the two upper ones, which are secured to and extend outward from the upper edge of the wash-box, being usually united and horizontally flattened at their outer ends to receive on their upper sides the oar-lock, while the two under rods or tubes extend outward from the gunwales of the boat and are fixedly connected at their outer ends with the underside of the flattened united portions of the upper rods. On the other hand, when the latter of these forms are employed only three rods or tubes are required, of which the upper inclined one thereof, that answers to the hypotenuse of the triangle and the one which answers to the altitude of the same, extend outwardly from the upper edge of the wash-box and from the gunwale, respectively, being similarly flattened and united at their outer ends to re-

ceive the oar-lock, while the other inclined or third rod or tube extends outward from the gunwale and is fixedly connected at its outer end with the under side of the two former at their flattened portions. With both of these constructions, however, the oar-lock is arranged wholly above their upper sides, and as a result thereof when power is applied by the oar to propel the boat it acts transversely across the outrigger some distance above its upperside, with the consequent effect of twisting or causing a torsional movement thereof and the loss of a corresponding amount of motion and power. Moreover, as the back of the loom of the oar which bears against the forward wall of the oar-lock is flat and is arranged in a plane parallel to the face of the blade this twisting or torsional action causes the oar to turn around its axis to such an extent as to carry the face of its blade forward of a vertical plane, with the result of creating a tendency of the blade to travel downward into the water by its inclined action thereon and for the oarsman thereby to "catch a crab," as it is sometimes called. To remedy this objection, it has been essayed to so arrange the forward wall of the oar-lock as to cause the face of the blade of the oar to incline sufficiently forward of a vertical plane or toward the stern of the craft, when no power is being applied thereto, to compensate for such torsional action, and insure of the face of the blade not being turned backward or toward the bow of the boat beyond a vertical plane when power is being exerted thereon. This arrangement while obviating to a certain extent the defect pointed out has not attained the efficiency desired, for the reason that if the inclination of the front wall of the oar-lock is so adjusted with respect to the twisting or torsional action of the outrigger as to bring the face of the blade of the oar into a vertical plane when a certain power is applied thereto, as when the oarsman is exerting himself to his utmost, it will not bring it into that position if a less power is applied thereto, as when the oarsman has become fatigued. As a consequence of this the oar can be applied with advantage only when the oarsman is fresh and is exerting himself to his utmost, and at all other times the face of the same will be inclined

forward or toward the stern of the boat, with the tendency to rise in the water, and thereby to not only decrease the anchorage thereon, but to raise the boat in the water as well.

5 On the other hand, if the adjustment of this front wall of the oar-lock with respect to such twisting or torsional action of the outrigger is such as to permit of the face of the blade of the oar assuming a vertical plane under a
10 less degree of power than when the oarsman exerts a power in excess thereof such face will turn back of such plane or toward the bow and the "catching of crabs" thereby endangered. To remedy this objection, it has
15 likewise been attempted to employ in connection with what are known as the "box oar-locks" and an ordinary four rod or tube outrigger a fifth rod or tube which extended out-
20 ward from the craft in the form of a brace and connected at its outer end with the upper portion of the oar-lock; but this, while permitting of the power being applied be-
25 tween this rod or brace and the remaining rods of the outrigger, materially increased the weight of the outrigger without obviating,
except to a very limited extent, the objection for which it was employed in consequence of
30 its defective arrangement with respect to the other parts with which it coöperated. In ad-
dition to the defects in the outrigger thus pointed out the disposition of the parts of the
boat or shell to which these outriggers have
35 been secured has been such as to but imperfectly distribute the strains transmitted there-
to from the oars, and this in a measure has contributed to a further loss of motion and
power, to the great disadvantage of the oars-
man.

The objects of my invention are therefore
40 to obviate these defects and to provide an outrigger which shall receive and transmit the power applied thereto from an oar by a direct longitudinal compression or tensile strain, as well as a trussing for the boat or
45 shell which shall receive such strain and distribute it to the various parts of the boat that are able to firmly resist it. It likewise has for its object to provide simple and conven-
50 ient means for securing the outrigger to the boat or shell, as well as for effecting the adjustment thereof and of the oar-lock to suit the front or operative wall thereof to changes
in the cross-sections of the oars due to hygro-
55 metric changes in the atmosphere and to other causes.

To these ends my invention consists, first, in the peculiarities of construction of the out-
60 rigger; second, in the peculiarities of construction of the truss for receiving and distributing the strains and in its combination with certain elements of the boat; third, in certain peculiarities of construction whereby
the union of the outrigger with the boat and
65 its adjustment with respect thereto are effected; fourth, in the means made use of for mounting the oar-lock upon the outrigger and regulating its position with respect

thereto and to the oar, and, fifth, in various other combinations and arrangements of parts, all of which will hereinafter more fully
70 appear.

Referring to the accompanying drawings, which form a part of this specification, Figure 1 is a plan view of a fragment of a shell, showing my improvements applied in connec-
75 tion therewith and especially illustrating the feature of trussing the same to enable it to properly receive and distribute the strains consequent upon the use of the outrigger; Fig. 2, a side elevation thereof, illustrating the
80 general construction and arrangement of the improved outrigger and its application to the craft, with a transverse section of the oar; Fig. 3, a cross-section of the same, taken in the plane xx of Fig. 1, looking in the direc-
85 tion of the arrow in that figure, and showing the outrigger and its connection in elevation; Fig. 4, an outline plan of a shell entire, showing one of the outriggers mounted thereon, the scale being much smaller than that of
90 other figures; Fig. 5, a top view, and Fig. 6, a corresponding side view, illustrating the manner of constructing the terminals or eyes of two rods or elements of the outrigger to receive the bolts by which they are secured
95 upon the bed-plates attached to the gunwales; Fig. 7, a sectional elevation illustrating in detail the special construction adopted in connection with the upper tube or element of the outrigger and the manner of adjustably
100 connecting that element with the vertical post of the truss; Fig. 8, a vertical section and elevation showing in detail the foot of the intermediate tube or member of the out-
105 rigger applied upon its bed-plate, the foot of the truss-post, the assembling-bolt, and the stud for receiving the end of the under of the transverse truss-rods; Fig. 9, a partial section and elevation showing the construction
110 of the top of the yoke which supports the oar-lock; Fig. 10, a horizontal section and plan corresponding with Fig. 9 upon a plane just below the spring; Fig. 11, a detail view, in vertical section and side elevation, showing
115 the manner of connecting the lower trunnion of the oar-lock with and adjustably mounting it on its yoke; and Fig. 12 a vertical section and elevation on a plane through line yy of Fig. 11.

In all the figures like letters of reference are
120 employed to designate corresponding parts.

A indicates the gunwales, B the side of the wash-box, C the keelson, D the seat-hangers, E the seat-supporting bars, F the seat-rails, and G the sliding seat, of a boat or shell
125 which is or may be of any ordinary or preferred construction. As here shown, however, the seat-hangers D are fixedly secured at their lower ends to the keelson C by a metal clip D' and extending upward and out-
130 ward therefrom are firmly connected near their middle portions with the gunwales A and receive near their upper ends the sides of the wash-box B, which are secured thereto.

By this arrangement these seat-hangers serve not only to support the sides of the wash-box and the sliding seat from the keelson and gunwales of the boat, but also to brace the craft and prevent it from twisting when strain is brought upon it.

H, I, and K indicate the rods or tubes which constitute the rectilinear elements of my improved outrigger. These rods or tubes may be made of any approved material. I prefer, however, to employ steel for the purpose, or an alloy of steel and nickel, as thereby the greatest amount of strength with the minimum weight is attained. The upper and under rod H and I are connected at their outer ends with a yoke or support L, which receives and carries the oar-lock M, the points of connection of these rods or tubes with the yoke being at approximately equal distances above and below a horizontal plane passing through the axis of the oar M' when employed and its own middle point, respectively. From the point of connection of these two rods or tubes with the yoke they diverge from each other slightly and extend either forward or backward from the yoke in substantially the same vertical plane at a somewhat acute angle with respect to the axis of the shell or other craft, as shown. The third rod or tube K is in like manner connected at its outer end with the yoke or support L; but instead of extending therefrom to its point of attachment to the shell or other craft at an acute angle to the axis of the latter its direction of extension is at approximately a right angle thereto, while its point of connection with the yoke or support is below that of both of the rods or tubes H and I.

For connecting the ends of the rods or tubes H, I, and K with the yoke or support L any of the ordinary and well-known methods of uniting similar parts may be adopted. I prefer, however, to connect the rods or tubes H and I therewith by brazing or welding, as thereby a firm and reliable union is accomplished without multiplication of parts, while to connect the rod or tube K therewith I find it convenient to employ a bolt *a*, as shown in Fig. 2, as by this means the adjustment of the oar-lock outward from or inward toward the gunwale of the shell or craft may be effected by simply substituting a longer or shorter rod or tube K, as the particular adjustment may require, and this may be permitted by merely removing and replacing the nut, as will be readily understood.

The outrigger being constructed as above explained may be applied to the shell or craft in various ways. In my preferred form of construction I make this application through the intervention of a truss of peculiar construction. As shown in the drawings, this truss consists of the post N and the three several members O, P, and Q. The post N in order to avail of the maximum strength with the minimum weight is preferably made either in the form of a tube of rectangular cross-section

or of an open-work girder, with its lower end inclined inward at about the angle of inclination of the sides of the wash-box B and provided at that point, on its inner side, with an outwardly-extending nipple *b* for reception of the end of the member Q, which is brazed or otherwise secured thereto. This member Q is preferably made tubular in form, as is the case with the members O and P, and extends transversely across the shell or other craft, being similarly connected at its opposite end with a small stand or bracket *b'*, that is fixedly secured upon the gunwale of that side of the craft by a bolt *b²* and may, with the lower end of the post N, be secured to the seat-hangers D, if desired, by bolts *b³*, as shown, the lower end of this post N being thus connected with the stand or bracket *b'* by the member Q, that extends across from one to the other, as explained. The upper end thereof is in like manner connected therewith by the member O, which extends across from one to the other in approximately the same vertical plane and inclines downward from the upper end of the post to the stand or bracket, being secured at its respective ends in the same manner as the member Q. In addition to being thus connected at its upper and lower ends across the shell or other craft to the stand or bracket *b'* the upper end of this post N is similarly connected with its own gunwale by the member P, which, secured at one of its extremities to the upper end of such post by a bolt *h*, extends longitudinally of the craft for some considerable distance and is connected at its other extremity with the upper side of its appropriate gunwale by screws or bolts *b⁴*. By this construction and arrangement of parts not only is the post N braced laterally of the boat, but longitudinally thereof, and any strain imparted thereto is similarly distributed. To the upper end of the post N as thus arranged the inner extremity of the rod or tube H is secured, while to its lower end the inner extremity of the rod or tube I is likewise connected. The rods or tubes H and I being thus connected with the post N, the inner extremity of the rod or tube K is connected with the gunwale A, and as thus disposed the oar-lock may be brought into the required position and there held.

For securing the inner ends of the rods I and K to their appropriate parts of the shell or other craft I provide each of these ends with an eye *c*, through which a bolt *c'* is passed and receives on its outer end an appropriate nut, suitable bearing-plates *c²* being secured to the outside of the craft by screws or bolts to receive the pressure of the rods or tubes as they are pressed inward along the bolts *c'* by their clamping-nuts. The bolt *c'* that passes through the eye of the rod or tube I likewise passes through the lower end of the post N, and thereby, in addition to holding the end of this rod or tube closely pressed in toward it, also serves to hold such post down

tightly against its gunwale and to bind it thereto. The bolt c' that passes through the eye in the rod or tube K, on the other hand, after passing through to the inside of the shell or other craft extends through one of the seat-hangers D, and thereby serves to anchor the inner end of this rod or tube firmly to the same, as shown.

For securing the inner extremity of the rod or tube H to the upper end of the post N a somewhat different arrangement of parts is required, since in addition to firmly binding them together provisions must be made for lengthening and shortening this rod or tube, whereby to raise and lower the oar-lock, as the requirement of the adjustment may demand. To this end the upper portion of the post N is supplied with a socket d , into which is fitted a hollow or perforated bolt e , the outer end of which is fashioned to bear against the extremity of the tube H, or if that tube be replaced by a rod then against a corresponding piece on the rod. By turning the bolt in or out the end of tube or rod H will be brought nearer to or forced farther from the end of the post, as is manifest, thereby changing the height of the yoke or support L and through it of the oar-lock M. The tube or rod H is supplied with an internal nut g , the same being seated in a recess formed for it, whereby to prevent its being displaced in either direction. A bolt h passes through the perforated bolt e and through nut g , whereby to act centrally of the rod, and is supplied with an exterior nut i , which will bear against the end of the socket. Upon loosening nut i the bolt e may be turned in or out, as may be required to secure the desired adjustment, when by turning the nut i tightly to its seat it serves not only to hold the various parts firmly in their adjusted positions, but also as a lock-nut to prevent them from working loose or accidentally changing therefrom. On the other hand, in order to permit of the rods or tubes I and K turning upon their bolts c' as the oar-lock is raised or lowered by shortening or lengthening the rod or tube H, as thus explained, the eyes c in their inner ends, instead of being made of uniform size throughout, are contracted at or near their middle point k , whereby to form, with the bolt passing through them, a sort of ball-and-socket joint.

With the outrigger and truss constructed and arranged as above explained all the strains upon the oar will be transmitted to the shell or craft to propel the same either in a direct line of compression or of tension and distributed by the truss to the parts thereof that are best able to withstand them, while at the same time obviating all twisting of the outrigger or torsional movement thereof. Moreover, in order to insure of the accomplishment of these results and to further strengthen the craft I sometimes find it convenient to still further connect the gunwales by cross-braces S, which extend across from

one to the other and are secured thereto at their ends by suitable screws or bolts m , as best seen in Fig. 1. The outrigger on the opposite side of the craft (not shown) is similarly arranged and trussed, so that the working strains are evenly sustained by both sides of the boat and the whole structure uniformly affected thereby, resulting in less twisting of the boat or tendency to twist than has been possible in former constructions, as well as in a more direct application of power in the direction of the travel of the boat, as will be readily seen.

In Fig. 1 I have shown the truss-rod P as applied to the post N on the side opposite the oar-lock, in which case its upper end is preferably bent around in front of the same and receives the bolt e , which passes through it before it enters such post, being held in place with respect thereto by the nut i ; but it is obvious that instead of being so applied it may be disposed on the same side as the oar-lock, in which case its upper end will be secured to the post by the hollow bolt e , which will pass therethrough and through the eye in the post and be firmly held against the latter by the nut i , as under the former arrangement. These and other modifications may be made in the mere location of the parts, due regard always being had to the simplicity and effectiveness required.

The yoke or support L may of course sustain any preferred form of oar-lock; but I prefer the swiveled form, and to further perfect the appliances I have devised means of mounting and sustaining it, substantially as shown in detail in Figs. 2, 9, 10, 11, and 12.

M indicates the oar-lock, seated in the yoke or support L and swiveled therein, so as to turn upon a substantially vertical axis which is preferably located some considerable distance in rear or aft of the vertical wall of the oar-lock against which the oar acts to propel the craft while power is applied thereto, whereby to pass downward through such oar as near its axis as is possible. The upper trunnion n enters an opening provided for it in the upper part of the yoke or support and is boxed therein by a loose bearing-piece o^3 , held in constant contact with the trunnion by a spring o' , bearing on one part of the yoke and capable of regulation as to tension by a screw-bolt o^2 , as is clearly indicated. The wearing piece or box o maintains the trunnion in constant position and compensates for any wear. Besides it permits of a slight motion of the oar to suit it to any adjustment of the latter in the yoke that may be required. By removing the spring and bearing-piece the oar-lock may be easily dismounted. The lower trunnion p is stepped in an adjustable block p' , the under surface of the latter being serrated, as indicated, to correspond with the serrated lower portion of the yoke or support on which it rests. A removable bolt p^2 locks the block p' to the yoke or support at any point at which the block,

and hence the oar-lock, may be located. This construction affords a seat for the lower trunion of the oar-lock, which is rigid and invariable when the device is in use, but one
5 which is capable of easy adjustment to bring the bearing-face of the oar-lock to a vertical or other position to compensate for any change in the shape or condition of the oar and bring its face in a vertical position, as previously
10 pointed out.

Under the special arrangement shown in the drawings the loom of the oar is intended to bear against the inner upright face of the oar-lock, which is preferably arranged in a
15 vertical plane, and the strains upon the outrigger in this construction are in the direction of compression; but this is unessential, and the parts may be so disposed as to cause these strains to be exerted in the direction of ex-
20 tension.

Immaterial changes alone are required to face the oar-lock in the opposite direction, and they need not be particularized herein. In whichever direction the craft is propelled
25 the strains upon the outrigger are distributed between the opposite sides of the craft in the best manner to be withstood and to be utilized in effecting the propulsion of the craft.

The features of improvement described contribute each to the perfection of operation in the appropriate manner indicated, and all are well calculated to accomplish the purposes or
30 objects of the invention previously alluded to.

While in the foregoing I have described the best means contemplated by me for carrying my invention into practice, I wish it distinctly
35 understood that I do not limit myself strictly thereto, as it is obvious that I may modify the same in various ways without departing from the spirit thereof.

Having now fully described my invention and specified certain of the ways in which it is or may be carried into effect, I claim and
40 desire to secure by Letters Patent of the United States—

1. An outrigger for a boat or shell, comprising a yoke or support for an oar-lock, and three rectilinear rods or tubes, of which the
45 two rods or tubes that receive the strain from the oar and transmit it to the craft in a direction longitudinally of their lengths are respectively connected with the said support above and below a horizontal plane passing
50 through its middle point and the axis of the oar and are with the third element adapted to be secured to the craft, substantially as described.

2. An outrigger for a boat or shell comprising a yoke or support for an oar-lock, and
55 three rectilinear rods or tubes, of which the two that receive the strain from the oar and transmit it to the craft in a direction longitudinally of their length to propel such craft are respectively connected with the said sup-
60 port above and below a horizontal plane passing through its middle point and the axis of the oar, while the third rod or tube is con-

nected therewith at a point below the others, and all adapted for securement to a boat or shell, substantially as described.

3. The combination, with an outrigger comprising a support for an oar-lock and three
70 rectilinear rods or tubes, of an oar-lock carried by such support, the two rods or tubes of the outrigger that receive and transmit
75 the power to the craft in a direction longitudinally of their lengths being respectively connected with the support for the oar-lock above and below a horizontal plane passing
80 through its middle point and the axis of the oar, with all of such rods adapted for securement to a boat or shell, substantially as described.

4. An outrigger for a boat or shell, comprising a support for an oar-lock, and three rec-
85 tilinear rods or tubes, of which the two that receive the strain from the oar and transmit it to the craft in a direction longitudinally of their lengths are respectively connected with such support above and below a horizontal
90 plane passing through its middle point and the axis of the oar, while the third rod or tube is connected therewith at a point below the others, with this last-mentioned rod or tube
95 and the under of the first-mentioned rods or tubes provided with eyes for the reception of retaining-bolts passing transversely through their free ends, substantially as described.

5. An outrigger for boats or shells, comprising a yoke or support for an oar-lock and three
100 rectilinear rods or tubes, of which the two that receive the strain from the oar and transmit it to the craft in a direction longitudinally of their lengths are respectively connected with the support for the oar-lock above and below
105 a horizontal plane passing through its middle point, with the upper of the first-mentioned rods or tubes provided with means whereby its length with respect to the devices to which it may be secured may be respectively in-
110 creased or decreased, substantially as described.

6. The combination, with the gunwales of a boat or shell, of a truss composed of an upright
115 post that is secured to one of such gunwales and three rectilinear rods or tubes connected therewith, two of which extend across from its top and bottom ends respectively to the opposite side of the craft and are fixedly con-
120 nected at their ends thereto, and the third extends from its top end along the craft and is connected at its opposite end with the gunwale on its own side of such craft, substantially as described.

7. The combination, with the gunwales of a
125 boat or shell and the upright post of a truss, secured to one of such gunwales, of an outrigger for the oar-lock the two rods or tubes of which that receive the strain from the oar and transmit it to the craft in a direction longi-
130 tudinally of their lengths are connected with such post at the top and bottom thereof respectively, and the truss rods or members, two of which in like manner extend from the

top and bottom ends respectively of such post across the craft and are secured at their other ends to the opposite side thereof, and the other of which rods or members extend from
 5 its top and is connected with the gunwale on its own side of the craft, substantially as described.

8. The combination, with a boat or shell, and suitable securing-bolts, of an outrigger
 10 having a plurality of its rectilinear rods or tubes provided with transversely-arranged eyes that are reduced in diameter at their central portion, whereby to allow of these eyes readily turning on the securing-bolts as the
 15 outrigger is swung upward or downward at its outer end for purposes of adjustment, substantially as described.

9. The combination, with a boat or shell, and suitable securing-bolts, of an outrigger
 20 having a plurality of its rectilinear rods or tubes provided with eyes on their free ends for coöperation with said bolts in securing the outrigger to the boat or shell, and devices through which the remainder of these rods or
 25 tubes may be secured to such craft and lengthened or shortened as may be required to raise or lower the outer end of the outrigger, substantially as described.

10. The combination, with the upright post
 30 of the truss, and the gunwales of a boat or shell, of the upper rod or tube that receives the strain from the oar and transmits it to the boat or shell in a direction longitudinally of its length secured to and made adjustable
 35 as to its length with respect to such post, the two remaining rods or tubes of the outrigger being adapted to swing upon their securing-bolts, a yoke or support for the oar-lock, and an oar-lock carried thereby, substantially as
 40 described.

11. The combination, with a boat or shell, of an outrigger comprising a yoke or support for an oar-lock and rectilinear rods or tubes, of which a plurality of these rods or tubes are
 45 connected at their outer ends to the yoke or support above and below a horizontal plane passing through its middle point respectively and connected at their inner ends with the boat or shell, whereby the power applied by
 50 the oar to the oar-lock is received and transmitted to such boat or shell in a direction

longitudinally of their lengths, while the other of these rods or tubes is or are connected at its or their outer end or ends with the yoke or support, and at its or their inner end or
 55 ends with the boat or shell, whereby to maintain the oar-lock at the required distance from the craft, substantially as described.

12. The combination, with an outrigger comprising a yoke or support for sustaining
 60 an oar-lock, and the rectilinear rods arranged and connected therewith as explained, of an oar-lock mounted in said yoke or support and made adjustable therein independently of any
 65 adjustment of such yoke or support for the purpose of varying the position of its bearing or working face with respect to the horizon, substantially as described.

13. The combination, with a yoke or support, and a swiveled oar-lock mounted therein,
 70 of an adjustable block for receiving one of the trunnions of the oar-lock, said block being secured to the yoke or support and capable of adjustment thereon, whereby to permit of changing the position of the working
 75 face of the oar-lock, substantially as described.

14. The combination, with a yoke or support having the serrated portion as explained, and a swiveled oar-lock, of an adjustable block
 80 for receiving one of the trunnions of the oar-lock and serrated on its under side for coöperation with the serrations on the yoke or support, and a bolt for locking this block to the yoke or support in adjusted positions, sub-
 85 stantially as described.

15. The combination, with an outrigger provided with a yoke or support, and a swiveled oar-lock mounted therein, of an adjustable
 90 block for receiving the bottom trunnion of the oar-lock, an adjustable wearing-piece for bearing against the trunnion at the upper end of such oar-lock, and a spring and screw for coöperation with this wearing-piece, substantially as described.
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In testimony whereof I have hereunto set my hand this 6th day of May, 1899.

MICHAEL F. DAVIS.

Witnesses:

WM. H. APPLETON,
 R. F. SWEENEY.