C. J. BAER.

BOAT.

APPLICATION FILED SEPT. 29, 1919.

1,395,889.

Patented Nov. 1, 1921.

2 SHEETS—SHEET 1.

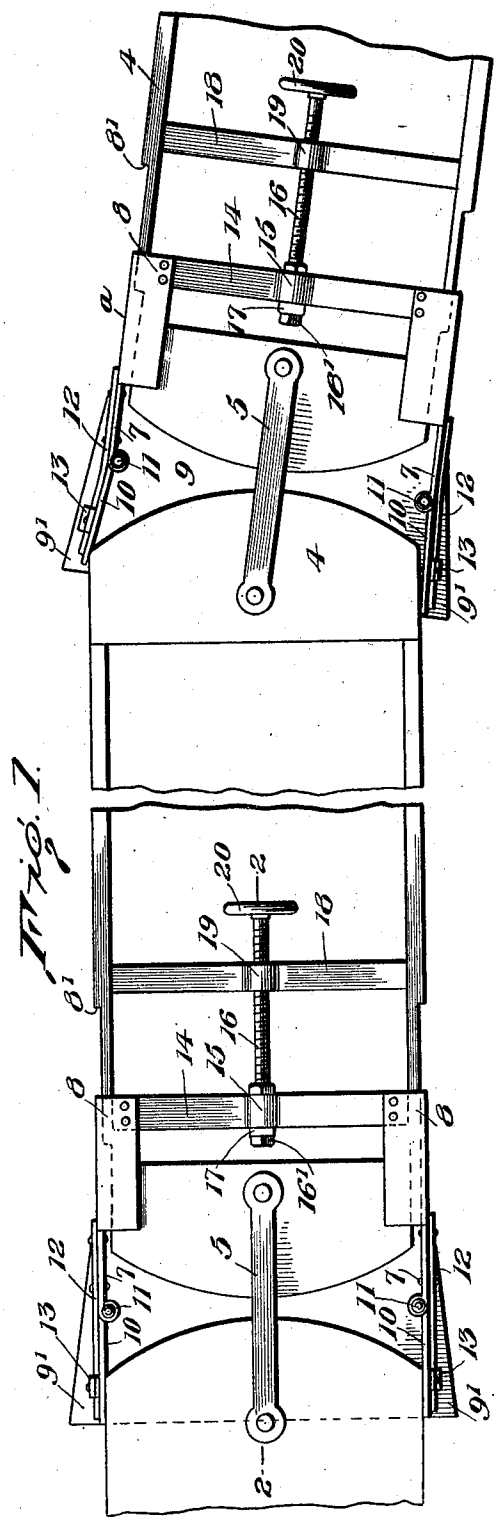


Fig. 1.

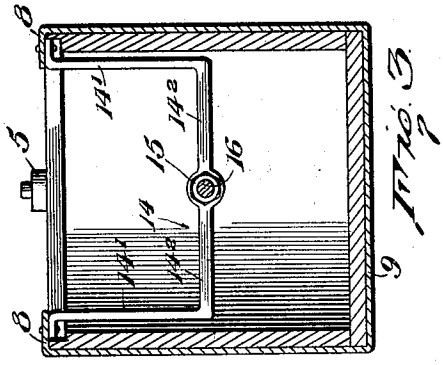


Fig. 3.

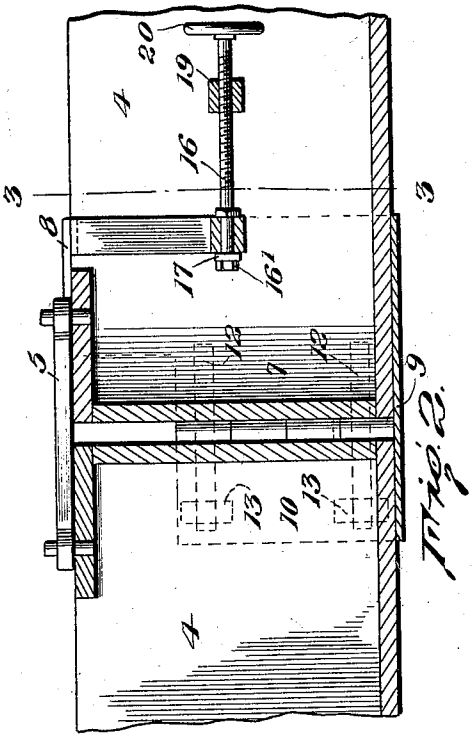


Fig. 2.

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2 SHEETS—SHEET 2.

Fig. 4.

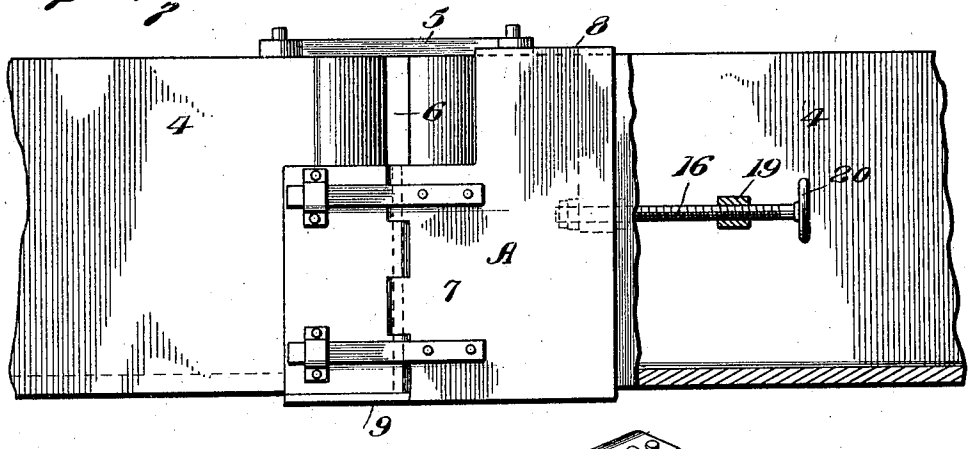


Fig. 5.

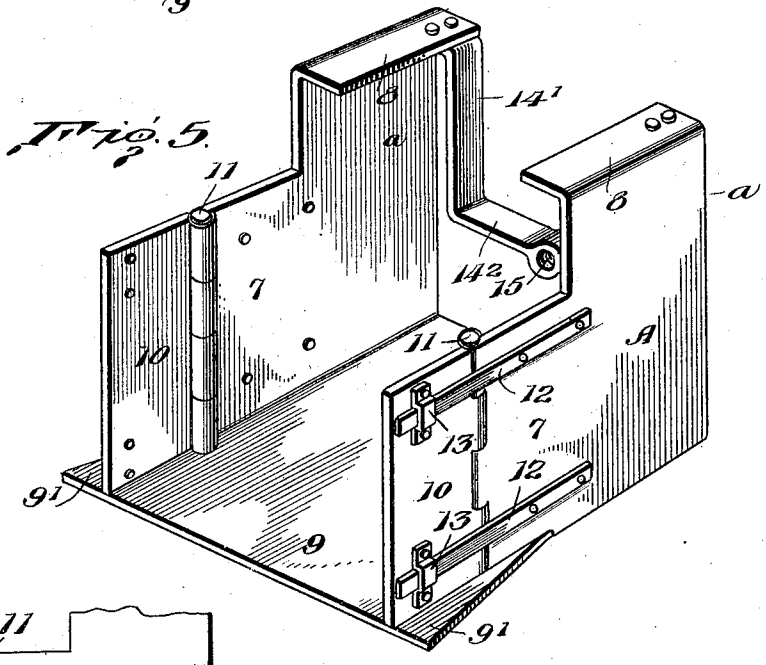
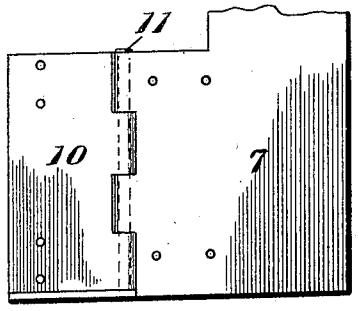


Fig. 6.



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UNITED STATES PATENT OFFICE.

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BOAT.

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Application filed September 29, 1919. Serial No. 327,102.

To all whom it may concern:

Be it known that I, CARL J. BAER, a citizen of the United States, residing at Riverside, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Boats, of which the following is a specification.

The invention broadly relates to the facilitation of the passage of boats or barges through the water. More particularly, the invention pertains to the provision of means adapted for attachment to a boat-like body, whereby the water between said body and the adjacent body, connected thereto, may be inclosed and carried along with the connected boats, thereby preventing free circulation of water between said boats and eliminating the retarding influence of "draw-backs" and end thrusts.

The invention is especially adapted for use in connection with a plurality of boats or barges joined in a string. Ordinarily such boat-like bodies (hereafter called barges), are of similar formation, provided with abutting ends which are usually convexed to permit of rolling contact in rounding curves. It is to be understood however that the invention is applicable to barges of any suitable bow and stern formation, for it is obvious that, when two connected barges are passing through the water, no matter what the formation of the ends, the space between the opposing ends of said barges is filled with water. In the absence of any means for the prevention thereof the water freely circulates between the ends of the barges, requiring constant displacement thereof as the barge moves. Under these circumstances, the power which moves the barges must be sufficient to overcome the "draw-back" effect at the stern of each, and also the end-thrust of the bow of every barge in the string.

My invention contemplates the substantial inclosure of all the water between the barges, whereby such water may be carried along therebetween and, in effect, become a component of the string. Experiments have proven that it is not necessary to provide an absolutely water-tight joint between the barges; it is sufficient if a free circulation of the water therebetween is prevented. Under such circumstances practically the only resistance to the movement of the string of units through the water, is the end thrust of the first barge, the draw-back of the last, and the frictional resistance along the sides of each. The experiments hereinbefore referred to have disclosed the fact that a 20 per cent. increase of speed may be imparted to the barges by inclosing the water in the space between them, and carrying said water along as a unit of the string.

An effective means of accomplishing this desired object, as well as others, as will hereinafter appear, is shown in the accompanying drawings forming a part of this application, in which—

Figure 1 is a top plan view showing a complete barge, connected at each end to another barge;

Fig. 2 is a section taken on line 2—2 of Fig. 1;

Fig. 3 is a section taken on line 3—3 of Fig. 2;

Fig. 4 is a side elevation showing the side of one of the barges broken away;

Fig. 5 is a perspective view of the end-inclosing housing, and

Fig. 6 is a detail showing a hinge joint used on said housing.

In the form of the invention as herein shown, 4 indicates the barge unit, and 5 a link member pivotally connected to two barges and operating as a coupling. As before stated the barges may be provided with ends of any shape, but they are herein shown of convexed form, the water space between being indicated by the numeral 6. It is obvious that, as herein shown, the barges are adapted for relative turning movement, and that, except for the provision of my housing to be hereinafter explained, a free circulation of water between the barges would take place.

Slidably mounted upon the stern of each barge I provide a housing, indicated as a whole by the letter A, and provided with side walls *a—a* which conform to and slidably fit the outer surface of the barge, adjacent its stern. As herein shown, each of the side members *a* is provided with a longitudinal extension 7, which may be riveted thereto or integral therewith. The extensions 7, 7 project rearwardly from the sides *a—a* to a point between the stern of one barge and the bow of the connected barge.

The housing A is supported upon the barge by means of inturned flanges 8—8, one on each side and adapted for sliding contact with the upper rails of the barge. In actual practice suitable anti-friction ele-

ments are interposed between said rails and said flanges. The outer surface of the rails are in-cut at each side, as shown in Fig. 1, providing shoulders 8′ which act as abutments and limit the forward movement of the housing.

The housing A is provided with a floor 9, which is so constructed that it is fitted and adapted for sliding contact with the bottom of the stern of the barge, and, being elongated as shown, is also adapted for sliding contact with the bottom of the bow of the connected barge. Moreover, as indicated in Figs. 1 and 5, the outer end of the floor 9 is flared or laterally extended, as indicated at 9′, being wider than the bottom of the connected barge, for a purpose to be presently indicated.

The extensions 7—7 carry leaves 10—10, pivotally connected thereto by means of a pivot rod 11, as shown in Fig. 6. These leaves extend rearwardly and slidably engage the sides of the bow of the connected barge, the lower edges of the leaves slidably engaging the top of the floor 9, as will be understood.

In order to insure constant engagement of the leaves 10—10 with the sides of the connected barge, I provide springs 12, 12, riveted or otherwise rigidly secured to the extensions 7—7, and passing through straps 13, 13 secured to the leaves 10—10. It is to be understood that the springs 12, 12 are normally straight, and, when in their normal condition, firmly hold the leaves 10—10 against the sides of the barge. In the movements of the connected barges, however, as in making turns, the barges will be out of alinement and the leaves will swing upon the rods 11—11 as pivots, and, no matter what the relative position of the barges, some portion of the leaves, from its top to its bottom, will contact the side of the connected barge on a vertical line. This will positively prevent a free circulation of water between the sides of the barges.

It will be noted that the floor 9 traverses the space between the bottom edges of the connected barges, and thereby prevents the "draw-back" effect of the one barge, and the end thrust of the other. The outwardly flaring or laterally extended portion 9′ of the floor 9 provides an increased surface for the lower edge of the leaves 10—10. Moreover the floor 9 extends outwardly for a considerable distance to the rear of the barge to which it is secured, and the bow of the connected barge is in contact with the upper surface of said floor. It is obvious therefore that, in the rising and falling movement of the ends of said barges, the resiliency of said floor 9 will materially aid in preserving this contact. Consequently, no matter what the relative position of the two connected barges, since a leaf 10 is contacting at each side of the rear barge, and, at its bottom edge, the upper surface either of the main body of the floor 9, or the extension 9′ thereof, a free circulation of water between the barges, either laterally or vertically, is prevented.

In order to provide means for effecting the longitudinal movement of the housing A, a hanger 14 is rigidly secured by rivets or otherwise, to the flanges 8—8 thereof. Said hanger is composed of two arms 14′, which extend downwardly within the barge, and are connected by a cross member 14^2, provided with a bearing 15. A screw-threaded shaft 16 extends through said bearing and has rotative engagement therewith, relative longitudinal movement between the shaft and bearing being prevented by a nut 16′ abutting a collar 17 surrounding the shaft and extending through the bearing. Extending between the sides of the barge and rigidly secured thereto, is a beam 18, provided with an internally screw-threaded bearing 19 in alinement with the bearing 15 on the cross member 14^2. The shaft 16 passes through said bearing 19 and is in screw-threaded engagement therewith. An operating wheel 20 is secured to the front end of the shaft 16. From the foregoing it is obvious that, when it is desired to connect the barges they may first be arranged end to end and the housing projected rearwardly by turning the wheel 20. The leaves 10—10 will slide along the sides of the rear barge, being pressed thereagainst by the springs 12, 12, and the floor 9 will slide under the bottom of the rear barge. When the barges are disconnected the wheel 20 is turned in a reverse direction, and the housing thereby retracted until the edge of the flanges 8—8 contact the shoulders 8′—8′, in which position the rear edges of the leaves 10—10, and of the floor 9, are substantially flush with the rear end of the barge, and out of the zone of probable injury through collisions, etc.

It is not believed that further description of the operation of my device is necessary.

I prefer to construct the housing A of sheet metal, but, manifestly, it may be of any suitable material. While I have herein described my housing as carried by the stern of the front boat, it is clear that it might just as well be carried by the bow of the rear boat.

Various modifications may of course be suggested to those skilled in the art, but I claim as my invention all such embodiments thereof as fall within the scope of the appended claims.

Having thus fully described my invention what I claim as new and desire to secure by Letters Patent is:

1. The combination with two connected boats having a water space therebetween, of

means carried by one boat and slidable longitudinally thereof to a position engaging the sides and bottom of the other boat, whereby the space between said boats is inclosed at the sides and bottom.

2. The combination with two connected boats having a water space therebetween of means carried by one boat and adapted for movement into position to engage the sides and bottom of the other boat and to inclose said space at the sides and bottom.

3. The combination with two connected boats having a water space therebetween of flexible members movable into position to engage the sides and bottom of each boat thereby inclosing said space at the sides and bottom, said members being adapted to prevent free circulation of water between said boats under all operating conditions.

4. The combination with two connected boats having a water space therebetween of means slidable into position for engaging the sides and bottom of each boat for inclosing said space at the sides and bottom, said means including flexible elements adapted to maintain said closed condition under all movements of the boats under normal operating conditions.

5. The combination with two connected boats having a water space therebetween, of means for inclosing said space at the sides and bottom, said means including pivoted side members supported by one boat and adapted to engage the sides of the connected boat, and a bottom member extending between the bottoms of the boats.

6. The combination with two connected boats having a water space therebetween, of means carried by one of said boats and adapted to be projected into position to engage the sides and bottom of the other boat and inclose the sides and bottom of said space.

7. The combination with two connected boats having a water space therebetween, of means carried by one of said boats and adapted to be projected into position to engage the other boat and inclose the sides and bottom of said space and means for moving said first named means into engaging and disengaging position.

8. The combination with two connected boats having a water space therebetween, of a housing mounted for longitudinal movement upon one of said boats and carrying members adapted to engage the sides and bottom of the connected boat and inclose the space between said boats, and means for moving said housing.

9. The combination with two connected boats having a water space therebetween, of a housing mounted for longitudinal movement upon one of said boats and carrying pivotally connected members adapted to engage the sides of the connected boat and a member adapted for extension under the bottom of said connected boat, whereby said space is inclosed, and means for moving said housing.

10. The combination with two connected boats having a water space therebetween, of a housing mounted for longitudinal movement upon one of said boats and carrying pivotally connected members adapted to engage the sides of the connected boat and a member adapted for extension under the bottom of said connected boat, whereby said space is inclosed, means for moving said housing and means for limiting the movement of said housing.

11. The combination with two connected boats having a water space therebetween, of a housing carried by one boat and provided with extensions adapted to contact the sides and bottom of the connected boat, and means carried by said housing causing the extensions to conform to the movements of said boats and maintain said contact.

12. The combination with two connected boats having a water space therebetween, of a housing carried by one boat and provided with extensions adapted to contact the sides of the connected boat, and means carried by said housing causing the extensions to conform to the movements of said boats and maintain said contact, said housing carrying another extension inclosing said space at the bottom.

13. A boat provided adjacent its end with means adapted to contact with the sides and bottom of a boat connected thereto, whereby to inclose the sides and bottom of the space between said boats, for the purposes set forth.

14. A boat provided adjacent one end with a member adapted to be projected so as to contact the sides and bottom of a second boat when the two boats are to be coupled, said member being adapted for retraction when the boat is to be used as a single unit, substantially as described.

15. A boat provided adjacent one end with a member adapted to be projected so as to contact the sides and bottom of a second boat when the two boats are to be coupled, said member being adapted for retraction when the boat is to be used as a single unit, and means for projecting and retracting said member.

CARL J. BAER.

Witnesses:
CHAS. A. BEATY,
WALTER J. WANE.