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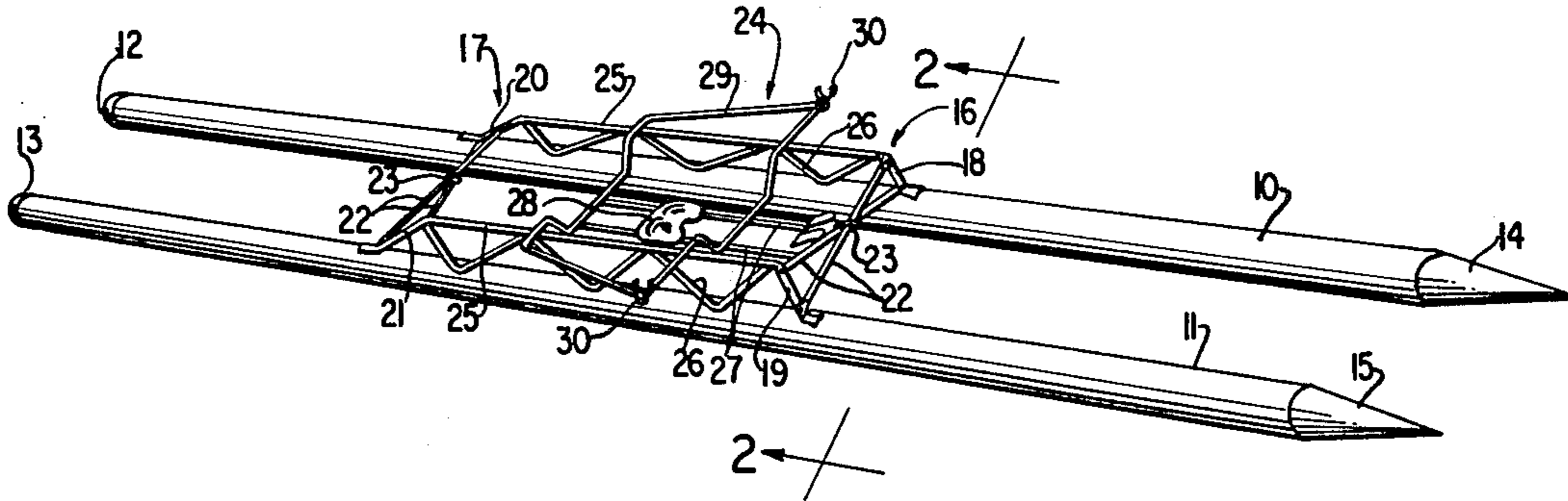
[54] **WATERCRAFT**
10 Claims, 8 Drawing Figs.

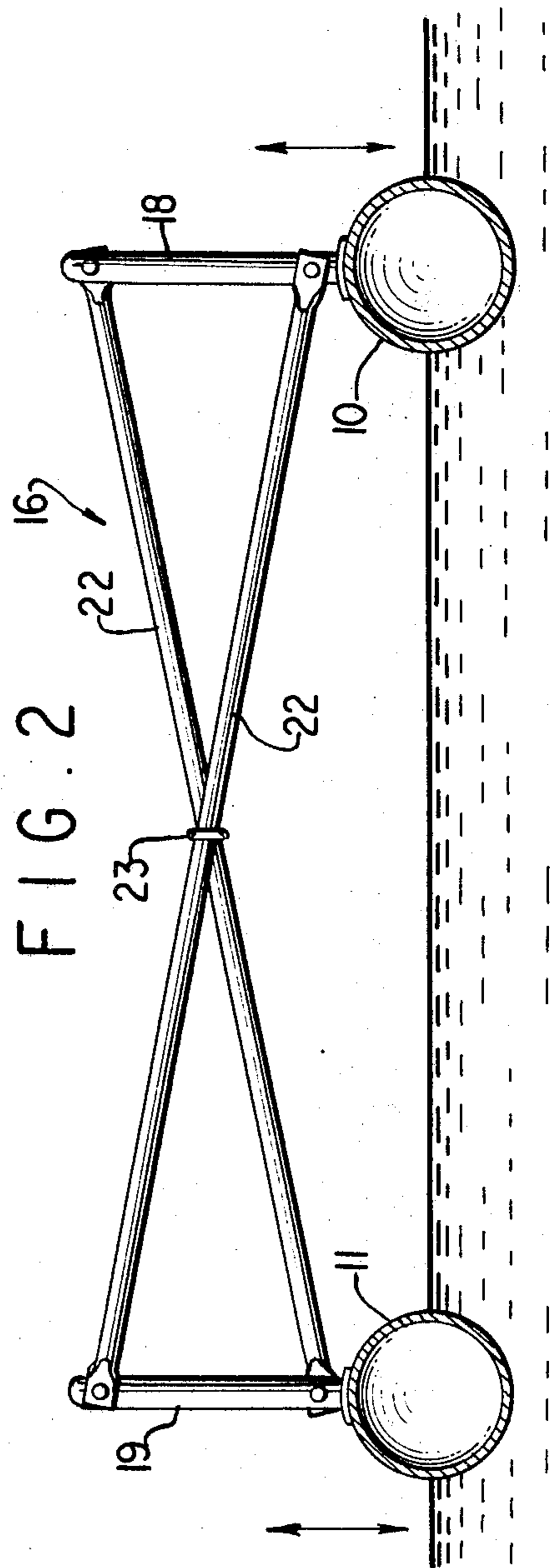
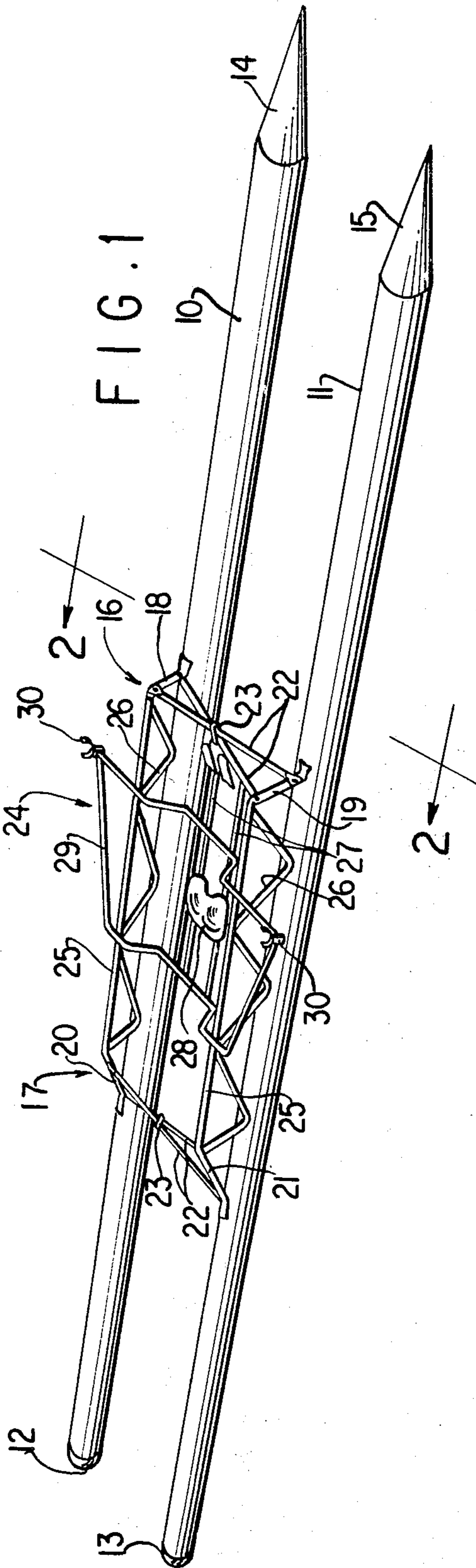
[52] U.S. Cl..... 114/61
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 [50] Field of Search..... 114/61,
 22, 26, 27; 9/2S

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ABSTRACT: A watercraft useful for rowing, sailing, and the like, wherein there are two spaced substantially parallel float members, the float members being joined by longitudinally spaced transversely extending structural means, each structural means including a vertically extending post, means, or column on its float, the tops of said posts being joined by at least one structural cross member extending therebetween so as to keep the floats parallel or at the desired angle relative to each other and so as to inhibit rolling thereof relative to each other.





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FIG. 3

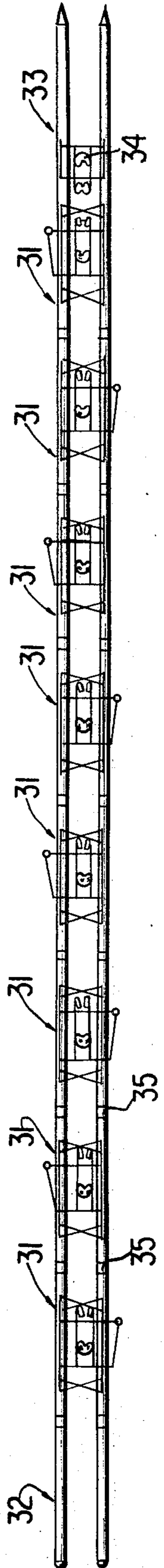


FIG. 6

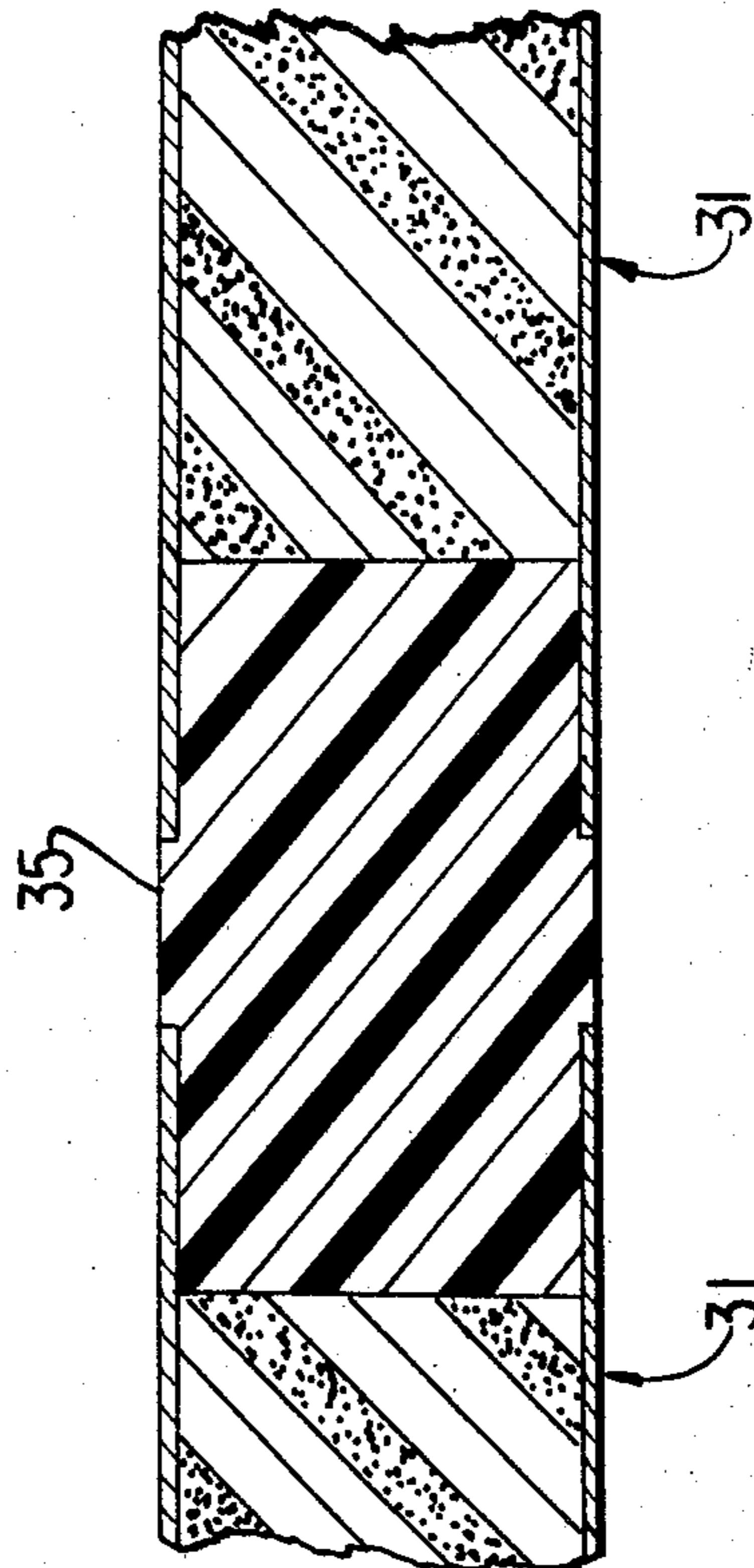
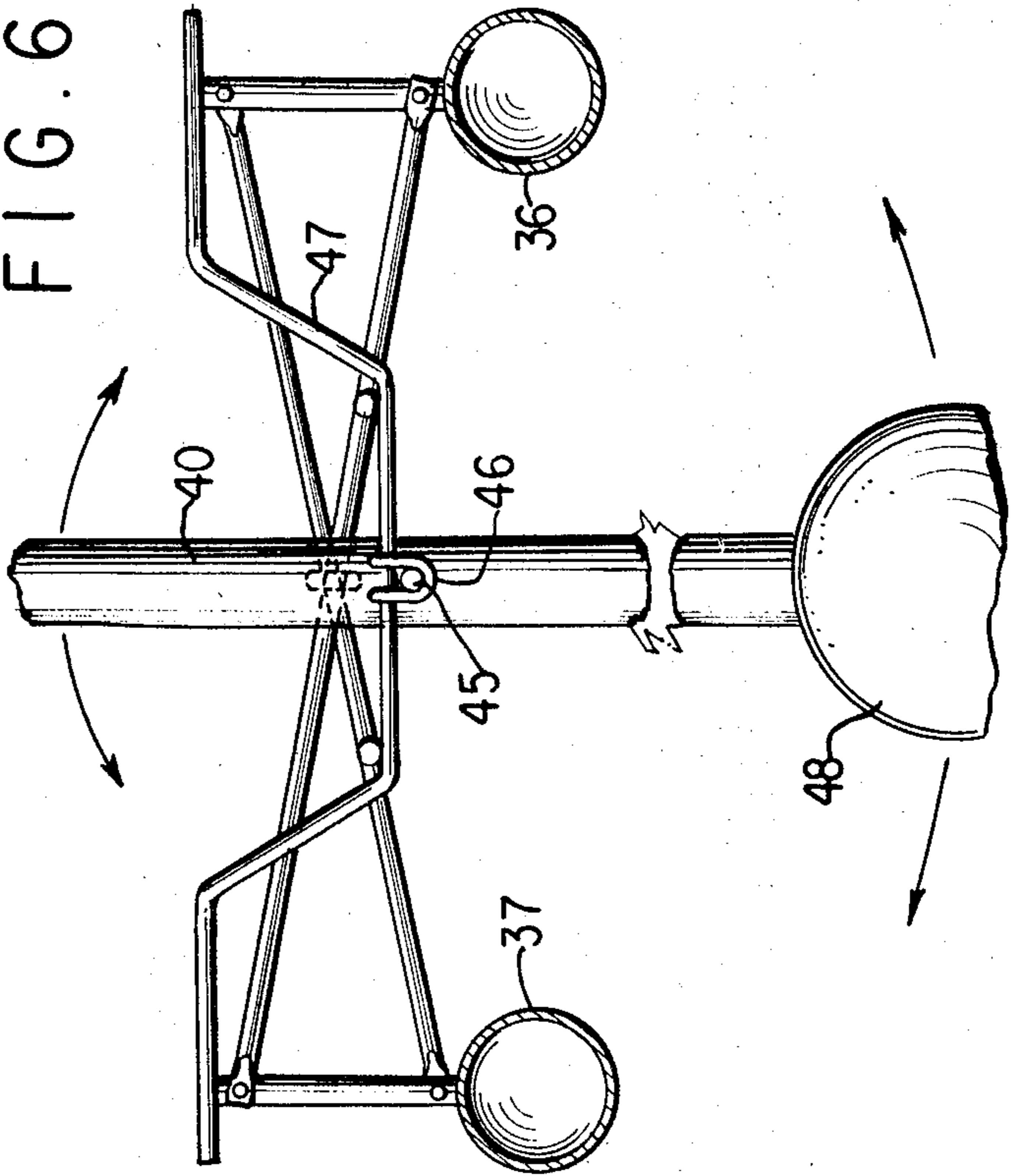


FIG. 4

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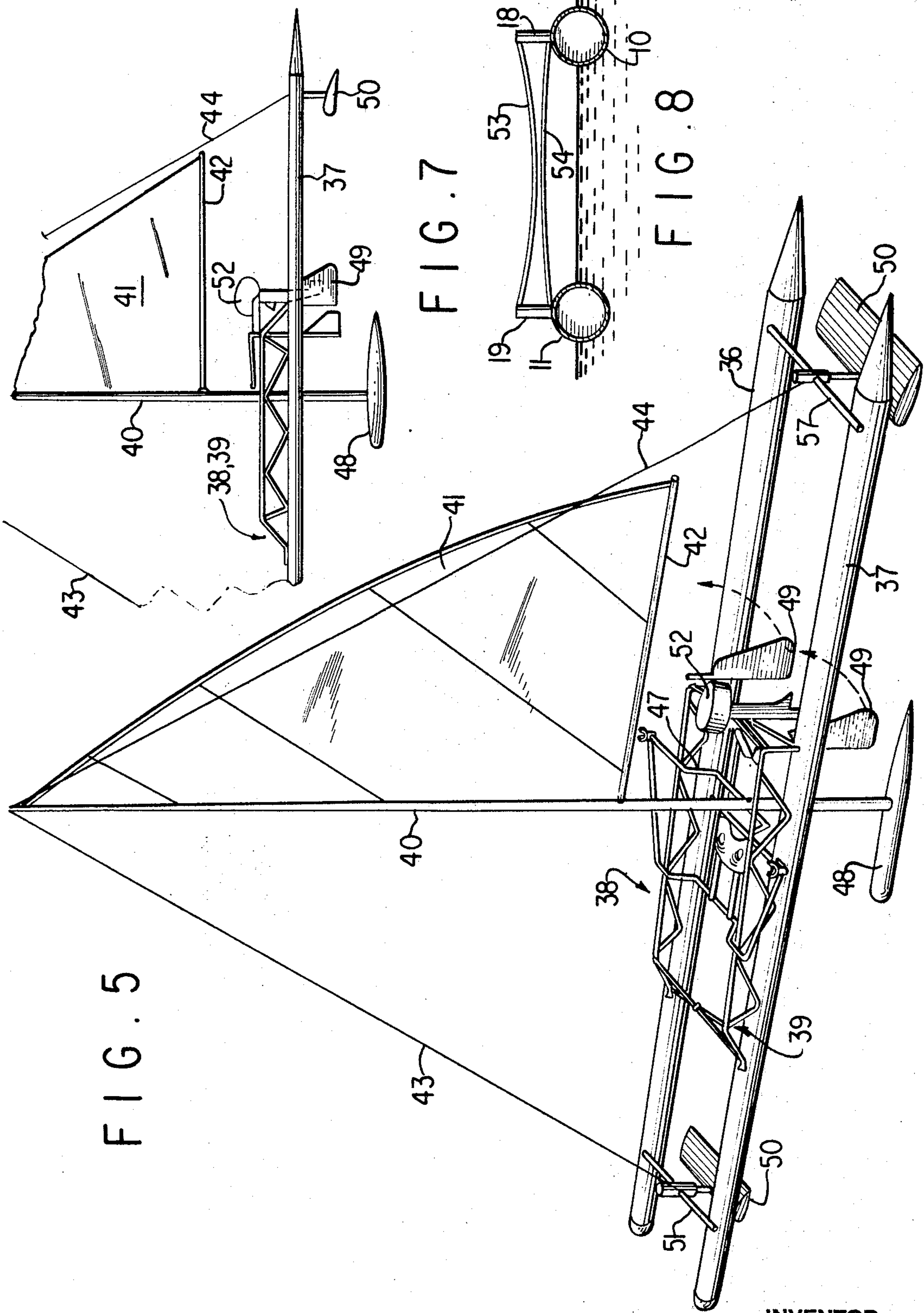


FIG. 5

FIG. 7

FIG. 8

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WATERCRAFT

This invention relates to watercraft having pairs of floats and especially to an arrangement for maintaining the floats in desired spaced relation.

In the prior art, catamarans and similar type craft have been known, but they are unwieldy and do not have the necessary characteristics for use for various purposes. It is also desirable to be able to control directionally the floating units of such a vehicle so as to either cause them to stay in parallelism for streamlining purposes or to be able to change the angle for blocking or braking. Also, there has not been a satisfactory arrangement for connecting a plurality of units wherein there is sufficient flexibility so that the structure is in effect articulated.

One of the objects of the invention is to provide an improved multi-hull watercraft which will maintain the desired relationship of the hulls or float members.

Another of the objects of the invention is to provide a watercraft which can be adapted for various uses.

Another of the objects of the invention is to provide an efficacious manner of making an articulated watercraft.

In one aspect of the invention, at least a pair of floating members or hulls are used which are kept in a substantially parallel arrangement by transverse structural members longitudinally spaced from each other, one toward the bow and one toward the stern. The transverse structural members are arranged so that forces involved in keeping the floats aligned are directed from a zone or point on a post vertically over each of the floating elements toward the top of the transversely located vertical post on the other float. The structural members can be formed in several manners. In one arrangement, there can be a cross bar connecting the top of the posts. In another form, a pair of crossed elements can be used extending from the top of one of the posts to the float portion. Also, various shaped members can be used to connect the two posts. The critical consideration is that these elements may have both torsional effect and column effect in maintaining the floats in desired relationship. The positioning of the floats is accomplished by the described arrangement of the vertical posts or vertical portions so that, as the floats twist or take angular relationships other than horizontal in adjusting to the water, the floats will be maintained in their parallel longitudinal axis relative to each other.

The arrangement can be used for various purposes. For example, track and sliding seat means, similar to those used in a rowing shell, can be placed thereon with the oars and outriggers fastened to a platform arrangement connected between the vertical posts or the floats.

Also, sailboat rigging and gear can be placed on the float member combination with the mast arranged to be pivoted and having a keel at the lower end thereof so that it will always remain vertical. Further, hydrofoil arrangements can be placed at either end of the craft between the two float members.

In a still further aspect, a plurality of units can be connected longitudinally with a flexible connection means between float units so that the float members will in effect be articulated.

These and other objects, features and advantages of the invention will become apparent from the following description and drawings which are merely exemplary.

In the drawings:

FIG. 1 is a perspective view of one form of use of the invention;

FIG. 2 is an enlarged view taken along the line 2-2 of FIG. 1;

FIG. 3 is a view of the invention wherein a plurality of units are joined;

FIG. 4 is an enlarged fragmentary sectional view showing one form of connection for use in FIG. 3;

FIG. 5 is a perspective view of the invention when used as a sailing craft;

FIG. 6 is a fragmentary sectional view of FIG. 5 showing one form of mast arrangement;

FIG. 7 is a reduced size fragmentary side view of FIG. 5; and

FIG. 8 is a sectional view of another form of structural cross member.

The invention will first be described in conjunction with a watercraft for rowing use as seen in FIGS. 1 and 2. Where appropriate, similar numerals will be given like parts in the various figures. Float members 10, 11 may be of a suitable material such as aluminum tubing. They may be hollow or may have a foam plastic therein. The leading or bow end of each has rounded heads or plugs 12, 13 and conically shaped trailing plugs 14, 15. The heads and plugs can be given contours to provide the best hydrodynamic effects.

In the form shown in FIGS. 1 and 2, the floats 10, 11 are maintained in their desirable substantially parallel relationship by transverse longitudinally spaced structures 16, 17. Vertical posts or members 18, 19, 20, 21 are in spaced pairs and project upwardly from respective floats upon which they are mounted.

From the tops of each post there are cross members 22 extending to the lower part of the opposite post. Preferably a loose link 23 encircles the cross members 22 adjacent the crossing point thereof.

The rowing or shell assembly 24 is carried by side bars 25 which can have truss arrangement 26 therealong. Tracks 27 support sliding seat 28. Outriggers 29 are also carried by the shell assembly, the outriggers having the usual rowlocks 30 mounted thereon.

As the floats tend to follow wave motion, the twisting and movement thereof will be inhibited by compressional and torsional forces exerted on cross members 22 through vertical bars or posts 18.

In another form, a plurality of units 31 may be joined with bow unit 32 and a stern unit 33. The stern unit 33 may have a coxswain seat assembly 34 thereon. The bow and stern units have heads and stern plugs similar to that described for FIGS. 1 and 2. The ends of the floats of units 31 can be joined by flexible connectors 35 which can be made of any suitable flexible material. The connector also could be made of a tube.

As can be seen in FIGS. 3 and 4, a form similar to a rowing shell arrangement is the result. The flexible connectors give an articulated effect so the watercraft can follow movement of the water. As is known, the stiffness of a long narrow wooden boat, such as a rowing shell, makes it difficult to operate in rough water. The connector can be made of neoprene, nylon, polypropylene and the like.

In a still further form, the float members of the hull can be used to carry a sailing rig such as shown in FIGS. 5, 6 and 7. The floats 36, 37 thereof have spaced transverse structural members 38, 39 similar to those previously described. Mast 40 can carry sail 41 and boom 42 in the usual manner. Fore and aft stays 43, 44 can support the mast in a fore and aft direction. The mast is pivotally mounted by pin 45 and yoke 46 to a crossbar 47. Keel or weight 48 at the bottom of the mast 40 will tend to urge the mast to a vertical direction and yet will allow movement thereof in response to wind pressure on the sails. Rudders 49 can be mounted on the assembly. The transverse structural members 38, 39 will permit movement of the parallel floats in a vertical plane because of water movement.

As a further arrangement, hydrofoils 50, 50 can be mounted on cross bars 51 as seen in FIGS. 5 and 7. The hydrofoil shaft can be raisable and lowerable as needed. Also, an outboard motor 52 could be attached to suitable brackets on the assembly.

The transverse structural member can take various forms. For example, as shown in FIG. 8, floats 10, 11 could have the vertical posts or members 18, 19 joined by curved tubing means or struts 53, 54. Also, a single bent member (not shown) rising vertically from each float and then extending across could be used. It also is conceivable that one of the transverse members could be adjustable in water so as to apply a braking force by changing the parallelism of the floats.

It should be apparent that details in construction and arrangement of parts could be made without departing from the spirit of the invention except as defined in the appended claims.

I claim:

1. In a watercraft, the combination including at least a pair of substantially horizontal parallel elongated float members, at least two longitudinally spaced pairs of vertical elements extending upwardly from said float members, a structural portion joining each pair of vertical elements, said structural portion being transverse to the axis of said parallel elongated float members, each of said structural portions comprising two cross members, one of the cross members extending from the top of one vertically extending element to a lower portion on the other float members, and the other of said cross members extending from the top of the other vertically extending element to a lower portion on the other float member so as to inhibit rolling of said float members and to maintain said float members in a desired angular relationship to each other with their longitudinal axes parallel.

2. A watercraft as in Claim 1 wherein there is an encircling

link around said cross members where they cross each other.

3. A watercraft as in Claim 1, wherein there is a rowing assembly mounted on said float members.

4. A watercraft as in Claim 1 wherein there is a sailing rig mounted thereon.

5. A watercraft as in Claim 4 wherein the mast is pivoted thereon and has a keel adjacent the lower portion of said mast.

6. A watercraft as in Claim 1 wherein hydrofoil means are mounted on said float members.

7. A watercraft as in Claim 1 wherein there are rounded heads and conically shaped plugs in the bow and stern end of said float members.

8. A watercraft as in Claim 1 wherein there are a plurality of units connected one to the other by flexible connections so as to provide an articulated rowing structure.

9. A watercraft as in Claim 1 wherein there are a plurality of units flexibly connected one to the other with a rowing assembly on each unit to form an articulated rowing structure.

10. A watercraft as in Claim 9 wherein there is an encircling link around said cross members where they cross each other.

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