United States Patent

[11] **3,540,401**

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[54] **SAILBOAT MAST COUPLING**
5 Claims, 4 Drawing Figs.

[52] **U.S. Cl.** **114/90,** 114/221
[51] **Int. Cl.** **B63b 15/00**
[50] **Field of Search** 114/39, 221, 102, 106, 90, 91; 85/1, 1P, 9

[56] **References Cited**
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ABSTRACT: A bolted coupling for a sailboat mast positioned in the lower portion of the mast and usually immediately above the boat deck. The coupling includes several connecting bolts which attached the mast sections together at connecting flanges formed on the adjacent portions of upper and lower mast sections and which also provide belaying pins. This easily removed mast coupling permits the mast to be disassembled for storage and equally importantly permits rapid removal of the upper mast portion in the event of mast failure at sea.

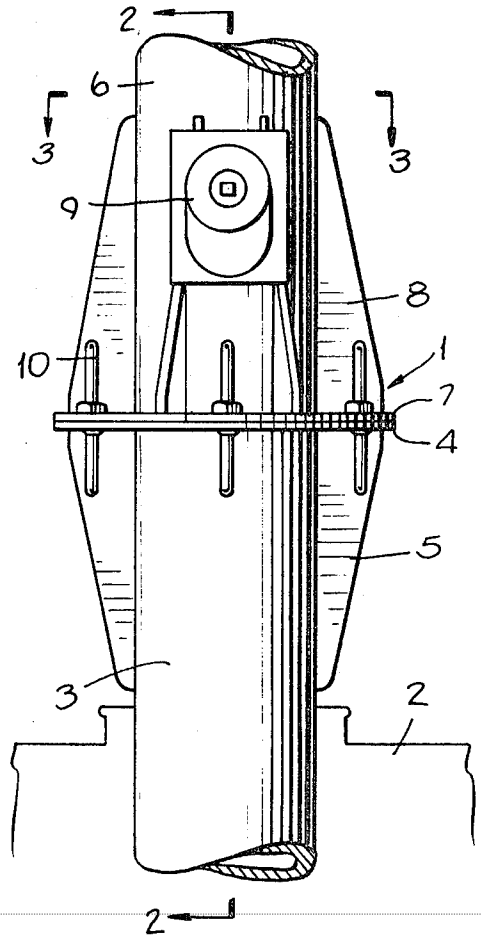


Fig. 1.

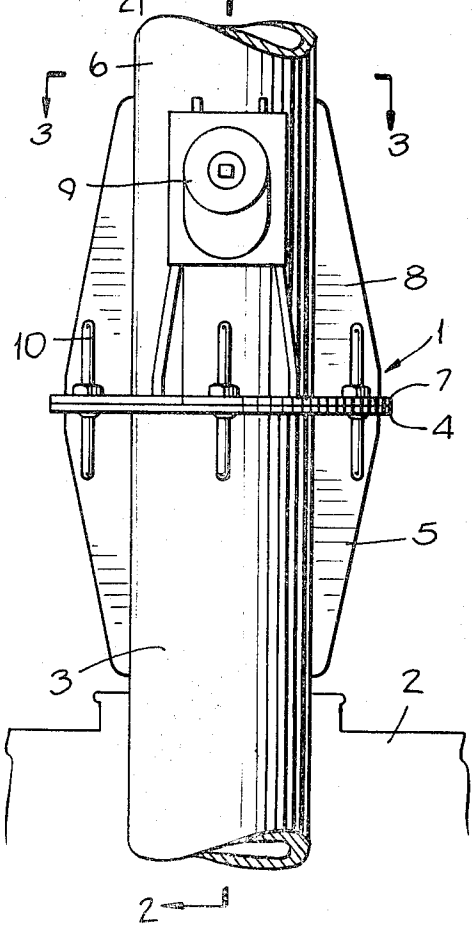


Fig. 2.

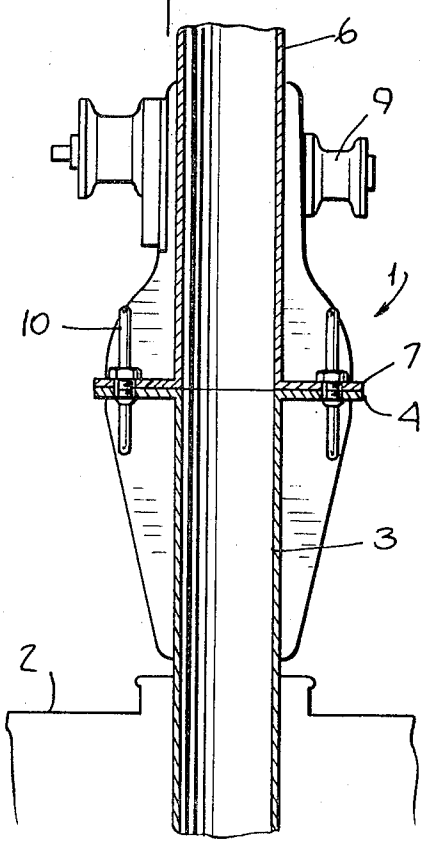
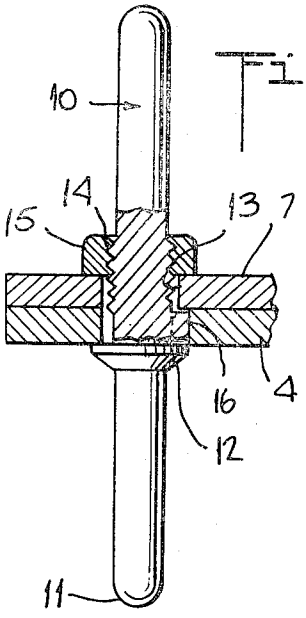


Fig. 4.



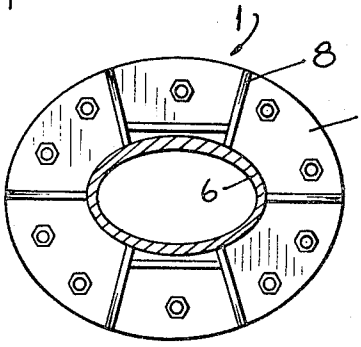


Fig. 8.

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SAILBOAT MAST COUPLING

BACKGROUND OF THE INVENTION

The present invention relates to an improved removable coupling means for a mast such as a sailboat mast. While various forms of foldable or separable masts have been used in the past, a truly satisfactory mast coupling has not been provided for masts such as aluminum masts used in sailing craft. Such a coupling is provided which is strong enough to permit the mast to be employed in sailing vessels and which is useful for mast removal during boat storage and which is even more important as a safety feature for removing the upper mast section during emergencies caused by mast failure at sea.

Past experience indicates that when a shroud or stay lets go on an aluminum mast, the mast will go over the side and will sharply bend rather than break. For example, in a rough sea with about 30 feet of water under the boat, a 45 feet mast will sink below the water and dig into the bottom as the boat tosses in a heavy sea. Under these circumstances it is a very difficult and lengthy procedure to cut the mast free. During the interim, the fastens are loosened in the hull and the wrecked vessel may go under.

A mast in accordance with my present invention includes a bolted connection where several bolts fasten flanges together which are provided on adjacent sections of the masts. As an additional feature of the invention, these coupling bolts during normal sailing are shaped and positioned for use as belaying pins for use in belaying halyards and other lines.

A preferred embodiment of the invention has been chosen for purposes of illustration and description and is shown in the accompanying drawings, forming a part of the specification, wherein:

FIG. 1 is a side elevational view of a preferred embodiment of a mast coupling in accordance with the present invention;

FIG. 2 is a vertical sectional view of the mast coupling taken along lines 2–2 on FIG. 1;

FIG. 3 is a horizontal section taken along the line 3–3 on FIG. 1; and

FIG. 4 is an enlarged detailed view of the coupling bolt.

The drawing illustrates a preferred embodiment of the mast coupling as used on the lower portion of a mast such as might be employed in a sailing vessel and most probably in a sailing yacht. The mast 1 formed of aluminum or a suitable metal alloy is shown mounted into a yacht hull 2 in the normal manner. The lower section 3 of the mast 1 is provided with a coupling flange 4 aligned generally at right angles to the axis of the mast 1. A series of reinforcing webs 5 are welded or otherwise fastened to the flange 4 and the mast portion 3.

The upper portion 6 of the mast 1, which is anchored in the usual manner by lines or shrouds which are not shown, is firmly attached to the lower mast portion 3 by a flange member 7 attached to the upper mast portion 6 and which is also reinforced with a number of webs 8 spaced around the flange 7 and welded or otherwise fastened to the flange and to the mast portion 6. Typical winch means or other fixtures may be attached to the mast on or near these webs. A pair of winches 9 are illustrated in the drawing.

The preferred form of bolt 10 for coupling the flange sections 4 and 7 together is shown as generally resembling belaying pins. Thus, the lower portion of the bolt is shaped with a smooth surface and rounded end 11 and with an enlarged collar 12 for engaging the mast flange 4 adjacent a coupling hole 13. The upper portion of the bolt include threads 14 to receive the connecting nuts 15. The bolts preferably are keyed to one or the other of the flanges 4 and 7 to hold the bolts from turning during their removal. A key is shown at 16. It is clear that this arrangement of several bolts as illustrated in the drawing provides both for a coupling means and also a line fastening means such as belaying pins for belaying the halyards and other rigging lines.

It is clear that the upper portion of the mast may be quickly detached by removal of the connecting bolts both for regular haul outs and also for emergencies at sea. It is also clear that this dismantling may be done rapidly and easily under even the most adverse conditions so that the present danger which results from the failure of metal masts is eliminated. As indicated above, failures in aluminum masts quite often take the form of a sharp bending of the mast so that the sails and rigging are carried into the water and possibly against the bottom. In this position, the craft is in considerable danger and the mast must be removed quickly. Attempts to saw or otherwise cut off aluminum or other metal alloy masts under these conditions are difficult and dangerous and may be ineffective. The coupling nuts may be removed by a few turns of a suitable wrench or other tool kept handy for this purpose.

As changes may be made in the construction and arrangements of the parts herein without departing from the spirit and scope of the invention and without sacrificing any of its advantages, it is to be understood that all matter herein is to be interpreted as illustrative and not in a limiting sense.

I claim:

1. In a sectional mast an improved coupling for detachably connecting the mast sections comprising the combination of a first flange formed at the upper portion of a lower mast section, a complementary second flange attached to the lower portion of the upper section of the mast and engaging said first flange, cooperating apertures formed in said lower and upper flanges for receiving coupling bolts and coupling bolts inserted in said apertures and each being held in place by a coupling nut, said bolts being generally in the shape of belaying pins and having portions extending above and below the engaged flanges and above and below the nut which hold the bolts in place.

2. The mast coupling as claimed in claim 1 in which said coupling bolts have relatively smooth upper and lower portions, and have intermediate threaded portions with adjacent flange engaging keys.

3. The mast coupling as claimed in claim 1 in which said coupling has a plurality of webs coupling the upper and lower flanges to the upper and lower mast sections respectively.

4. The mast coupling as claimed in claim 3 in which the webs comprise mountings for winch means.

5. In a sectional mast an improved coupling for detachably connecting the mast sections comprising the combination of a first flange formed at the upper portion of a lower mast section, a complementary second flange attached to the lower portion of the upper section of the mast and engaging said first flange, cooperating apertures formed in said lower and upper flanges for receiving coupling bolts and coupling bolts inserted in said apertures and being held in place by a coupling nut, said coupling bolts having relatively smooth upper and lower extending portions, and an enlarged flange engaging portion at about the center of the bolt, and nut receiving threads positioned above said enlarged portion and extending upwardly along only a portion of the distance to the bolt tops.