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Goldberg

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[54] **SKATE SAIL**

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[73] Assignee: **Waterfun, Inc.**, Stamford, Conn.

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[52] **U.S. Cl.** ..... **280/11.37 S**

[51] **Int. Cl.** **A63c 3/00**

[58] **Field of Search** ..... 280/11.37 S; 9/310; 114/102, 39, 43, 103

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Assistant Examiner—Milton L. Smith
Attorney—Ronald J. St. Onge et al.

[57] **ABSTRACT**

A skate sail has a tubular, sectional mast and boom with the sections being joined by a split sleeve male member secured into one end of a section and telescopingly engageable into the adjacent section. The sail is secured to the mast and boom by provision of a hook on the sectional jib bow which closely engages a bore in the forward end of the boom. The sail peaks and tail bow are secured to each end of the mast and the rear end of the boom by halyards and a lanyard engaging jamb cleats having notched ends.

11 Claims, 9 Drawing Figures

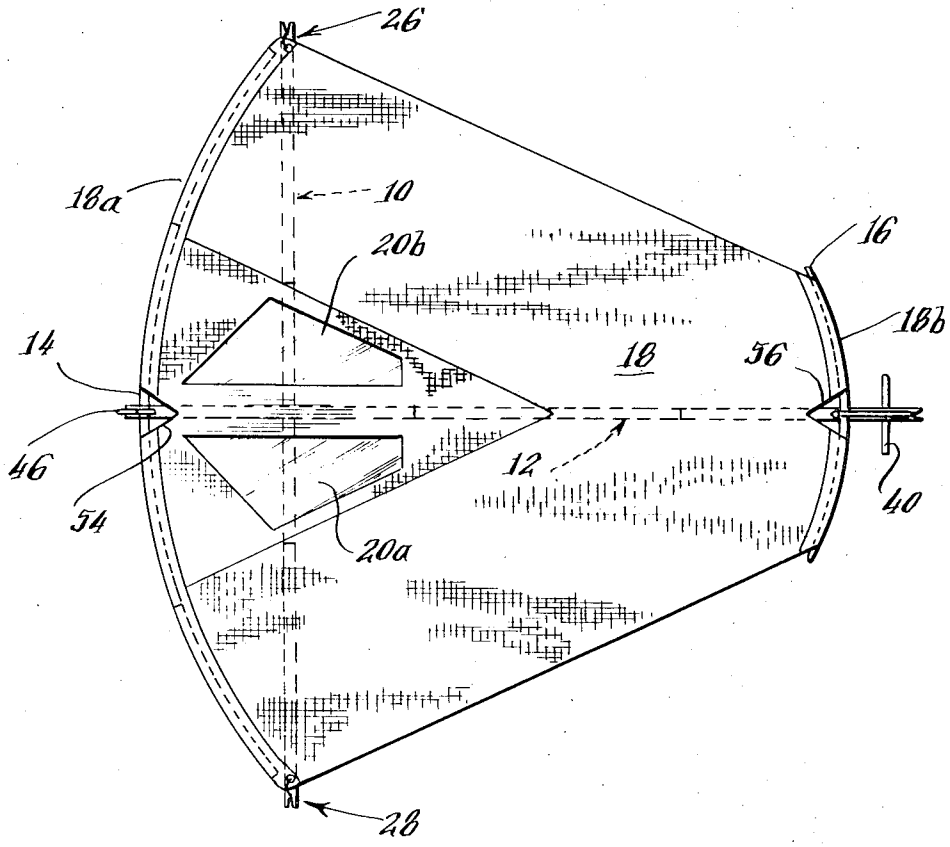
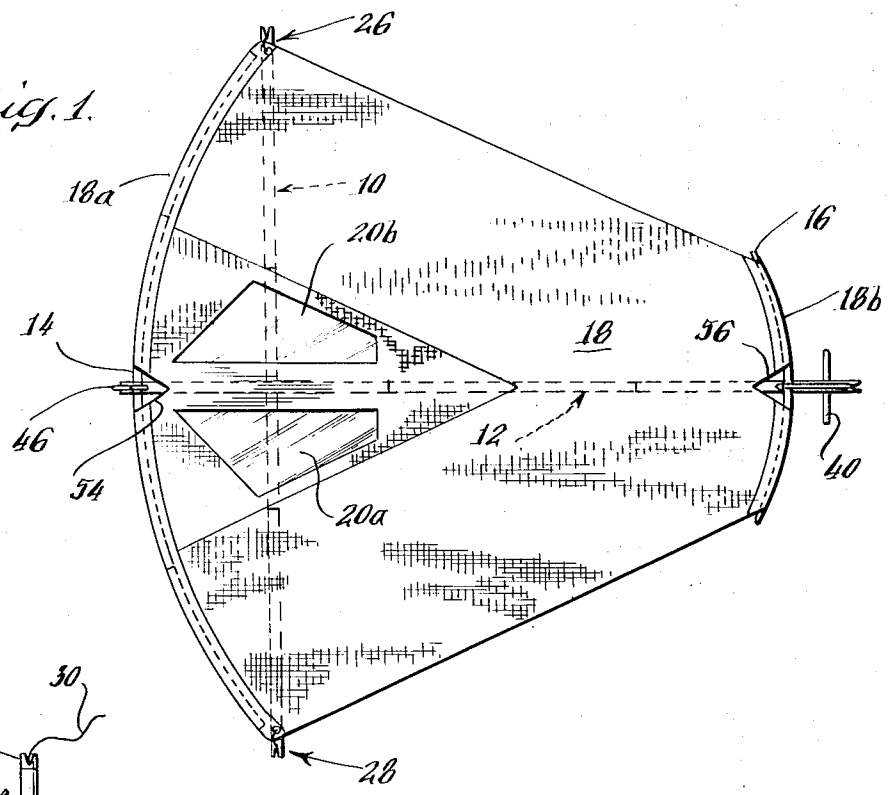


Fig. 1.


26
18a
10
20b
16
18b
14
18
56
46
12
40
54
20a
28

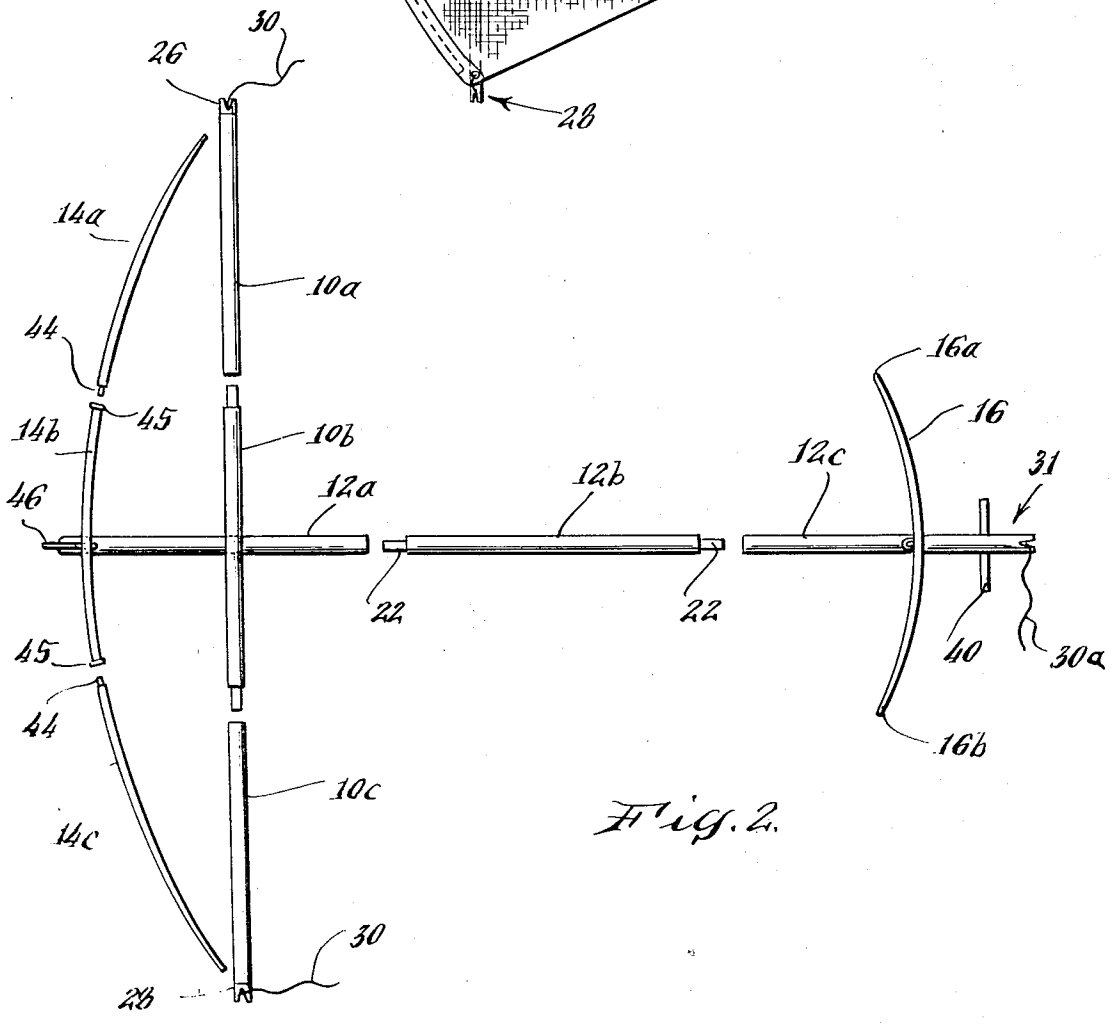

30
26
14a
10a
44
45
14b
10b
12a
12b
12c
16a
16
31
46
22
22
45
40
30a
44
16b
10c
14c
30
28

Fig. 2.

Fig. 3.

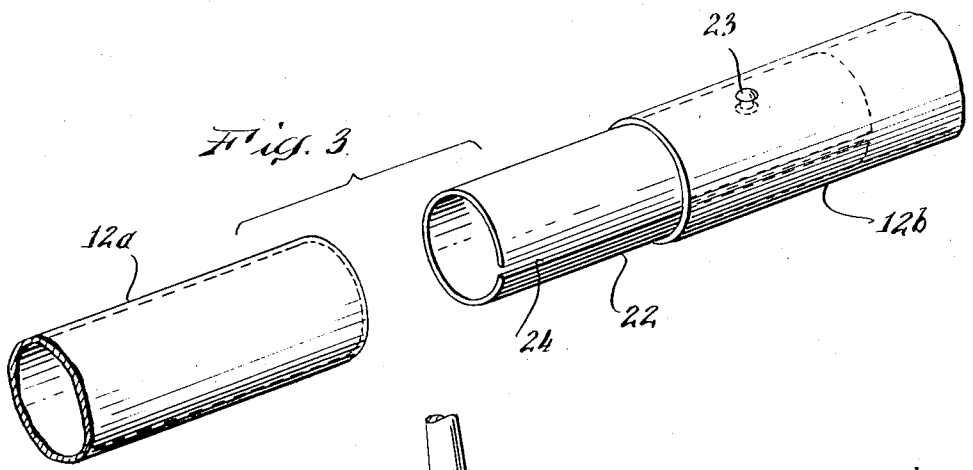


Fig. 4.

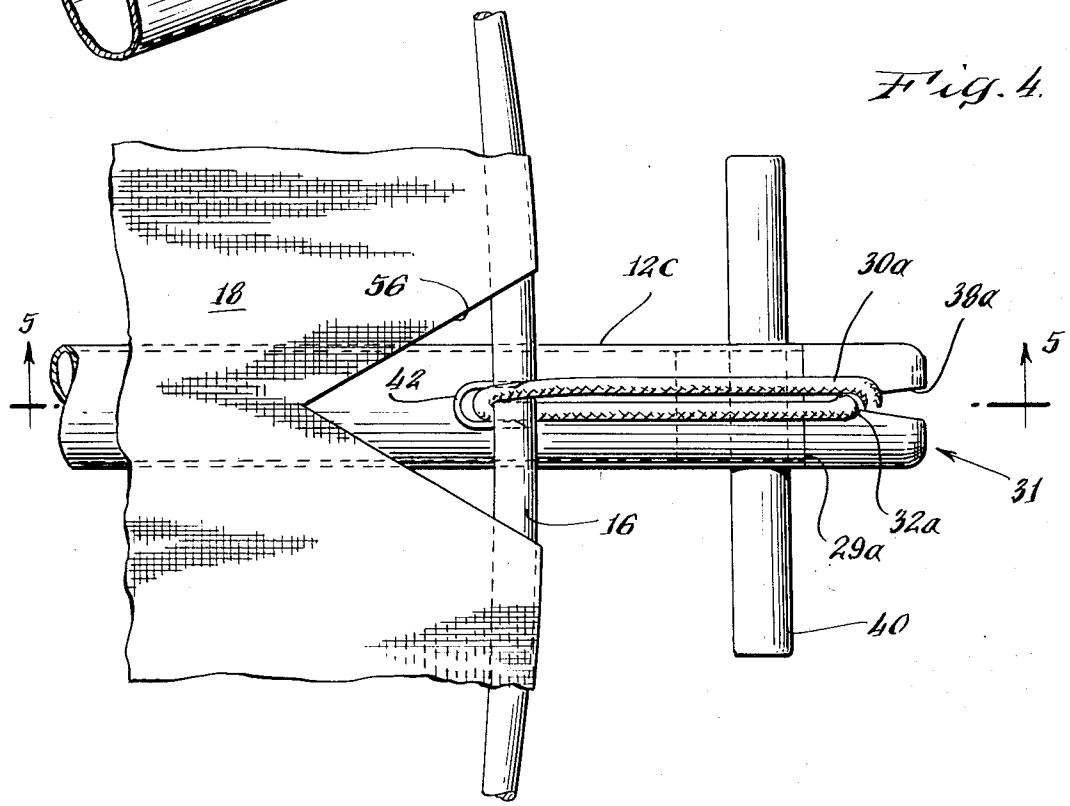


Fig. 5.

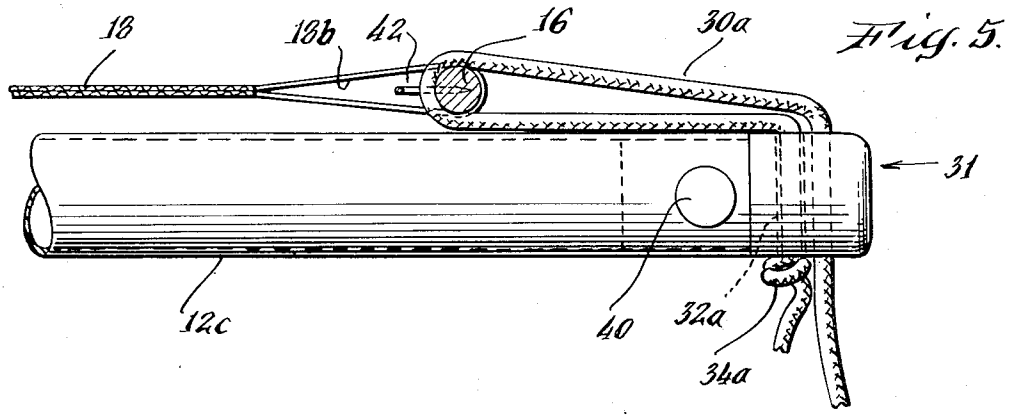


Fig. 6.

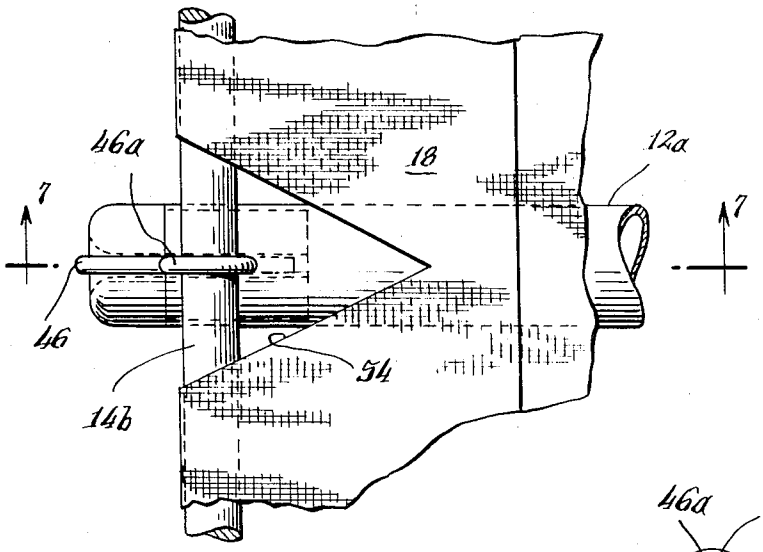


Fig. 7.

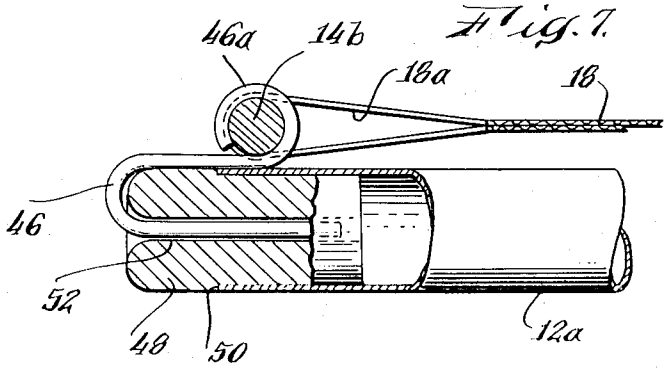


Fig. 8.

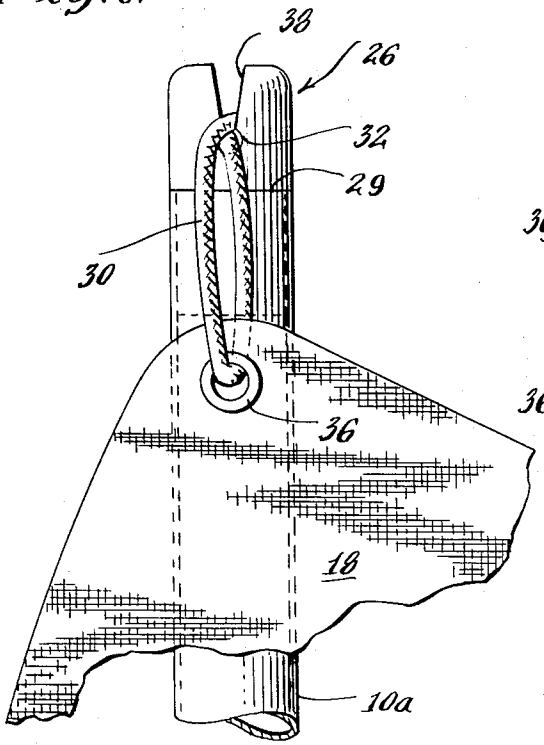
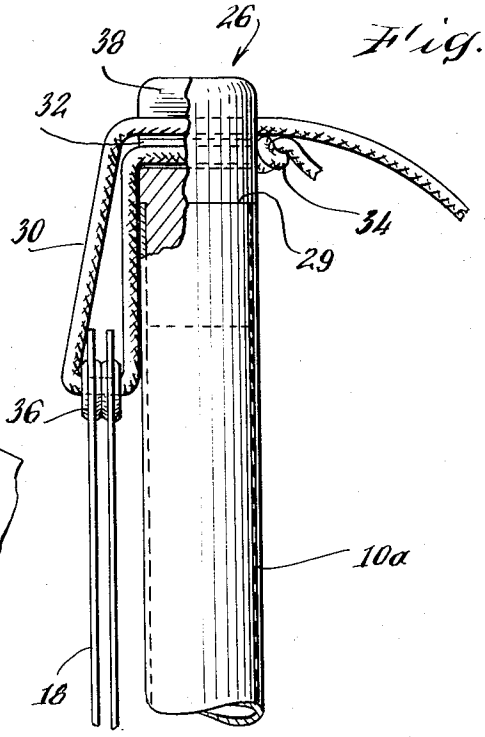


Fig. 9.



SKATE SAIL

BACKGROUND OF THE INVENTION

This invention relates to improvements in skate sails and more particularly to a skate sail which is easy to assemble and disassemble and which is a light weight, strong and efficient sail.

Skate sails have been used by ice skaters for some time for propulsion of the skater by the wind. Prior art skate sails have been large kite-shaped structures which are basically air foils which propel the skater as the wind passes over the sail. The skater stands on the leeward side of the sail with the boom resting on his shoulder at the balance point and the hand nearest the sail grasps the lower part of the mast. As the skater's speed increases he may lean against the sail to be supported by the wind with the skate blades acting like the keel of a sailboat resisting side motion and maintaining the course of the skater. Tacking to change the course angle to the wind is accomplished by raising the sail horizontally over the head and bringing it down on the other side of the skater. Raising the sail to the overhead position also spills the wind for stopping. Prior art skate sails generally comprise a vertical mast with a crossing boom member which are latched together at the center of the mast and toward the forward end of the boom.

The sails have a rounded front portion formed by a jib bow which is secured at its forward peaks to each end of the mast and then the sail is stretched over the mast and boom frame work by a smaller tail bow inserted in the sail and secured to the tail end of the boom. Such prior art sails typically had masts made of wood or one piece metal tubular members which were excessively heavy and/or cumberson to store or carry. Further, the halyards and tail bow lanyard have been difficult to secure in prior art skate sails. Further problems have been encountered in the securing of the jib bow to the forward end of the boom.

Accordingly, it is an object of the present invention to provide an improved skate sail that is light weight, strong and efficient as a sail.

A further object of the invention is to provide a skate sail of the above character wherein the boom and/or mast members are made of interfitting telescoping sections of strong light weight material.

Another object of the invention is to provide a skate sail of the above character wherein jamb cleats are provided at each end of the mast and at the outhaul or rear end of the boom for securing the sail thereto.

A further object of the invention is to provide a skate sail of the above character wherein the forward end of the boom has a bore for receiving a U-shaped pin to hold the jib bow to the boom.

A still further object of the invention is to provide a skate sail of the above character which can be readily assembled and disassembled.

Other objects of the invention will in part be obvious and will in part appear hereinafter.

The invention accordingly comprises the features of construction, combination of elements, and arrangement of parts which will be exemplified in the construction hereinafter set forth, and the scope of the invention will be indicated in the claims.

For a fuller understanding of the nature and objects of the invention, reference should be had to the following detailed description taken in connection with the accompanying drawings, in which:

FIG. **1** is a plan view of a skate sail of the invention;

FIG. **2** is an exploded view of the mast, boom and front and rear bows of the skate sail of the invention;

FIG. **3** is a partial detail view of the mast and boom coupling;

FIG. **4** is an enlarged detail view of the tail end of the boom showing the securing of the rear bow thereto;

FIG. **5** is a side view in partial section taken along line **5—5** of FIG. **4**;

FIG. **6** is an enlarged detail view of the boom engaging portion of the front bow;

FIG. **7** is a top view of the boom engaging front bow attachment in partial section taken along line **7—7** of FIG. **6**;

FIG. **8** is an enlarged partial plan view of the end portions of the mast; and

FIG. **9** is a partial side view in partial section of the end portions of the mast.

SUMMARY OF THE INVENTION

The invention comprises an improved skate sail having a sectional mast and boom, each preferably made of three telescoping sections secured to one another by a slotted male coupling telescopingly interfitting with the end portions of the mast and boom. The invention further comprises three jamb cleats, one at each end of the mast and one at the tail end of the boom. These comprise an insert into the preferably tubular aluminum alloy mast and boom of a wooden or plastic member having a jamb notch cut longitudinally therein and having a width substantially wider than the width of the halyard or lanyard line used to secure the sail and tapering to a width substantially less than the diameter of the line so used. Adjacent the narrow end of the jamb notch there is preferably a hole through which the line is passed with one end being secured to the cleat member by knotting the end of the line.

The jib bow is preferably made of three sections and the central section is provided with a U-shaped hook secured thereto for engaging a center bore on the forward end of the boom. Thus the front bow which holds the forward edge of the sail can be easily and positively secured to the forward end of the boom with the sail in close proximity to the boom. The tail bow is substantially shorter and is preferably made of one flexible piece which is secured to the tail end of the boom by a lanyard.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to FIGS. **1** and **2**, it will be seen that the mast **10** is comprised of three sections, **10***a*, **10***b*, and **10***c*, and that the boom **12** is similarily comprised of three horizontal sections **12***a*, **12***b*, and **12***c*. The jib or front bow **14** is also comprised of three sections **14***a*, **14***b*, and **14***c*, and is preferably made of fiberglass reinforced plastic with the unjoined ends of sections **14***a* and **14***c* tapering from the center section. The tail bow **16** is also preferably of fiberglass reinforced plastic and has tapering end portions **16***a*, **16***b*. As shown in FIG. **1**, the flexible front and tail bows are bent into a curved configuration when the sail **18** is stretched between the two ends of the mast and along the boom. A pair of clear plastic windows **20***a*, **20***b*, are provided adjacent the crossing area of the mast and boom so that the skater can look through the sail as he is moving.

As shown in FIG. 3, both the mast and boom couplings are all provided with a sleeve 22 having a longitudinal split 24 over its entire length to form the male member as illustratively shown on the portion of the boom 12*b* for telescopingly interfitting into the female member 12*a*. The boom and mast sections are all made of tempered aluminum alloy as are the male sleeves 22. Thus the boom and mast are both strong, but light weight and are readily assembled by interfitting sleeve 22 into the adjacent section. Sleeve 22 is forced into section 12*b* for about half of the sleeve length and is bonded or riveted in place such as by rivet 23. Upon insertion into section 12*a* the sleeve 22 is thus slightly compressed toward the slot 24 which urges sleeve 22 into a close fitting relationship with the interior section 12*a* when assembled. Male coupling member 22 is made from a length of aluminum alloy tubing having a slightly larger diameter than the inside diameter of tubes 12*a* or 12*b* which keeps it under tension when inserted. Further, since both the mast and boom are under end to end compression when in use, there is no danger of the mast or boom coming apart. The mast is constructed in the same manner as the boom, but is preferably smaller in diameter. A diameter of about 1 ½ inch for the boom and 1 ¼ inch for the mast is preferable with a mast and boom length of between 7 and 9 feet depending upon the area of the sail.

As shown in FIGS. 1 and 2, and in detail in FIGS. 8 and 9, at each end of the aluminum alloy mast there is provided a mast cleat 26, 28 preferably made of wood or plastic. As shown in detail in FIGS. 8 and 9, the mast cleats are fitted into the ends of the mast with a shoulder 29 bearing against the mast end. A polyester halyard 30 having a diameter of ⅛ of an inch is secured into the mast cleat through bore 32 and secured as by a knot 34. The halyard then is passed through a double grommet 36 in the sail peak and is secured in notch 38 running transversely in the cleat. As best seen in FIG. 8 the notch 38 tapers toward the hole 32 to securely jam the halyard 30 therein under tension to secure the sail at each end of the mast. The notch 38 is wider than the diameter of the halyard at its open end and substantially narrower than the diameter of the halyard at the end near hole 32. Thus the sail can be quickly and readily secured to the mast and pulled up tight with the halyard being secured in the wedge-shaped notch 38. The halyard is about 25 inches long and excess may be wrapped around and tied to the end of the cleat.

As shown in FIGS. 1 and 2, and in detail in FIGS. 4 and 5, a similar cleat 31 is provided at the tail end of the aluminum boom with shoulder 29*a* engaging the aluminum alloy boom member 12*c* with ⅛ inch polyester lanyard 30a being secured through hole 32*a* by knot 34*a* (FIG. 5) passing around tail bow 16 and then jammed into wedge-shaped notch 38*a* when the sail is stretched under proper tension. A pin 40 is secured through the boom end and the cleat upon which both feet of the assembler may be placed to provide leverage in stretching the sail to its proper tension. A staple 42 is secured into the center of tail bow 16 to position lanyard 30*a* thereon. The lanyard is about 30 inches long and excess lanyard may be wrapped around the cleat and secured by a half hitch for example.

As shown in FIG. 2 the front bow is preferably made of three fiberglass reinforced plastic sections 14*a*, 14*b*, 14*c*, with the end sections 14*a* and 14*c* being identical tapered rods with metal male ferrules 44 securable into metal female ferrules 45 on each end of the center section 14*b*. The center section 14*b* is preferably of a constant cross-section and as shown in FIGS. 6 and 7, is provided with a U-shaped heavy metal wire hook 46 secured to the center of center section 14*b* by hook portion 46*a* being wrapped around the center section and permanently attached thereto. A wood or plastic plug 48 having a shoulder 50 is fitted into the end of front boom section 12*a* and has a deep bore 52 for receiving the free end of hook 46. Thus the front bow can be readily assembled and secured to the boom merely by the insertion of hook 46 into opening 52 of plug 48. The radius of curvature of the U-shaped portion of hook 46 is only slightly larger than the radius of plug 48 whereby the front bow will be closely positioned to the end of boom section 12*a* upon assembly. Alternatively, hook 46 can be permantly fastened to plug 48 and hooked to center section 14*b*.

For assembly the user assembles the front bow sections and inserts them into the forward edge of the sail with the hook 46 being positioned in sail notch 54 (FIG. 6) and the tail bow inserted into the rear bow pocket 18*b* with the staple 42 in rear sail notch 56. The mast and boom sections are then telescoped together and the sail is secured peak to peak on the mast by halyards 30 being pulled and secured in jam cleats 26, 28. Boom plug 48 is attached to hook 46 and lanyard 30*a* is brought around bow 16. The skater then places a foot on each side of the tail end of the boom against pin 40 and hauls on the lanyard 30*a* until the sail is stretched to the proper tension. Lanyard 30*a* is then secured in boom cleat 31 and the sail is ready for use.

It will thus be seen that the objects set forth above, among those made apparent from the preceding description, are efficiently attained and, since certain changes may be made in the above construction without departing from the scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

What is claimed is:

1. A skate sail assembly comprising in combination:
   - A. a vertical mast,
     1. having a jamb means for securing a line therein at each end thereof;
   - B. a horizontal boom,
     1. having a jamb means for securing a line therein at the tail end thereof;
   - C. a flexible jib bow,
     1. having means for engaging its central section with the forward end of said boom;
   - D. a flexible tail bow;
   - E. a sail member stretched between said jib bow and said tail bow, and
     1. said sail being secured to each end of said mast and said tail bow to the tail end of said boom by means of lines from tne forward sail peaks and from the tail bow respectively, to said jamb means at the ends of said mast and at the tail end of said boom.

2. The skate sail defined in claim 1 wherein said mast and said boom are each comprised of telescoping sections having male and female end portions, said male portions having a longitudinal slot along their length.

3. The skate sail defined in claim 2 wherein said male end portions are formed by a tubular, longitudinally slotted member of slightly larger diameter than the

mast or boom section and which is fitted thereinto by compression, insertion and release of the slotted member.

4. The skate sail defined in claim **1** wherein said jamb means comprises a jamb cleat secured into the end of said boom or mast, said cleat having a jamb notch cut into its end, said notch tapering from substantially wider than the diameter of said line to a width substantially narrower than the diameter of said line.

5. The skate sail defined in claim **4** wherein said jamb cleats further comprise means forming a horizontal bore through said cleat adjacent the narrow end of said notch, said bore being of a size to permit passage of a line therethrough.

6. The skate sail defined in claim **1** wherein said jib bow is comprised of three sections, a center section of substantially constant diameter and two end sections having a tapering cross-section toward the free ends thereof, all three said sections being joined together by telescopingly engageable ferrules.

7. The skate sail defined in claim **6** wherein the forward end of said boom is provided with means forming a central opening and the central section of said jib bow is provided with a boom engaging member secured thereto, said boom engaging member having a U-shaped portion, one leg of the U being engageable into said central opening of said boom.

8. The skate sail defined in claim **6** wherein the forward end of said boom is provided with a jib bow engaging member having a U-shaped portion and the central section of said jib bow is provided with a ring means for engaging one leg of said U-shaped portion.

9. A skate sail assembly comprising

A. a mast comprised of
   1. a plurality of tubular metal sections,
      a. joined together by a longitudinally split sleeve of metal secured into one end of a section to form a telescopingly engaging male coupling member,
   2. jamb means for securing a line therein for securing a halyard at each end of said mast;

B. a boom comprised of
   1. a plurality of tubular metal sections,
      a. joined together by a longitudinally split sleeve of metal secured into one end of a section to form a telescopingly engaging male coupling member,
   2. jamb means for securing a line there in at the rear end of said boom for securing a lanyard thereto,
   3. a bore in the forward end of said boom;

C. a jib bow comprised of
   1. a central section,
      a. having a U-shaped hook secured thereto, and
   2. two end sections telescopingly engageable with said central section;

D. a tail bow; and

E. a sail member stretched between said jamb means at each end of said mast and by a lanyard from said tail bow to said boom jamb means, the forward portion of said sail being held by said jib bow hook engaging said bore in the forward portion of said boom.

10. The skate sail assembly defined in claim **9** wherein said jamb means for said halyard and said lanyard comprise plugs secured into the ends of the mast and rear end of said boom, notches cut into said plugs having a tapering width, said width being greater than the diameter of the halyard and lanyard at its outer open end and tapering to a width of less than the halyard or lanyard at its inner end.

11. The skate sail assembly defined in claim **10** wherein said jamb means further comprises means forming a lateral bore through said plugs adjacent the inner end of said notch and the halyard and lanyard passing through said bore.

* * * * *