May 3, 1932. A. M. DOERFLER 1,857,094

TØY BOAT

Filed Feb. 3, 1931

Fig. 1.

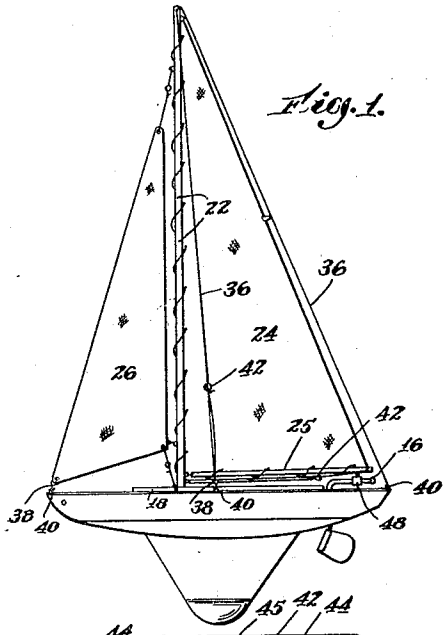
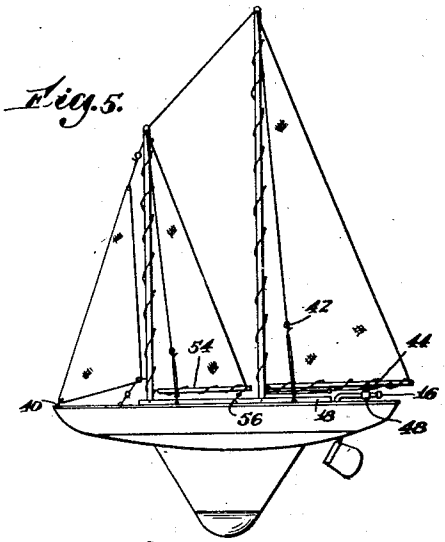


Fig. 5.



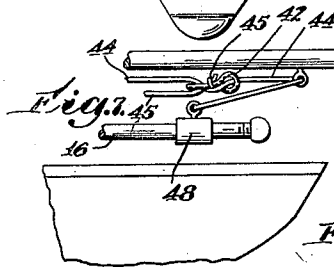


Fig. 7.

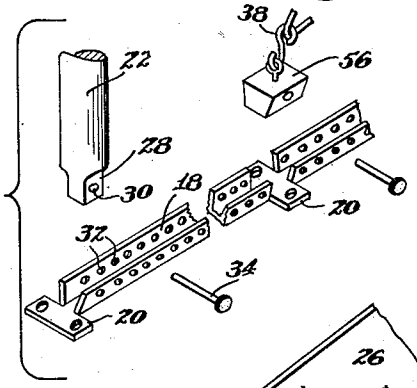


Fig. 2.

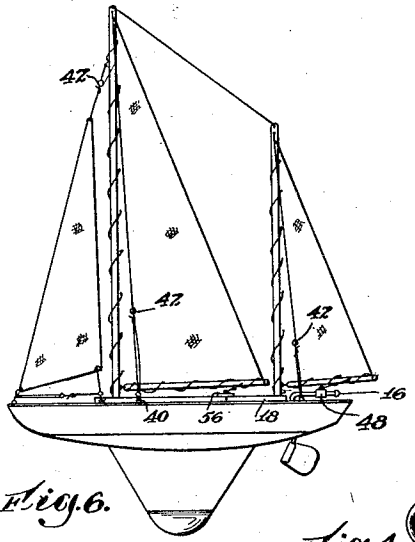


Fig. 6.

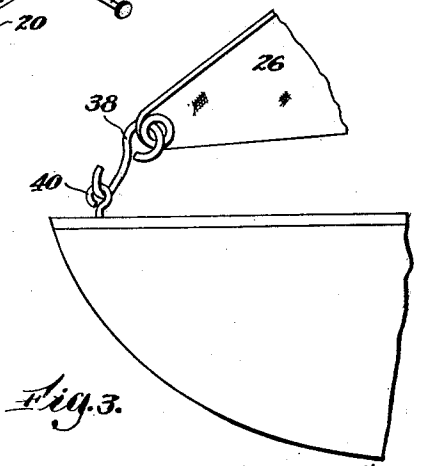


Fig. 3.

Fig. 4.

Inventor
Alfred M. Doerfler
by Mitchell, Chadwick & Kent
Attorneys

Patented May 3, 1932 1,857,094

UNITED STATES PATENT OFFICE

ALFRED M. DOERFLER, OF MANSFIELD, MASSACHUSETTS, ASSIGNOR TO EVERETT E. KENT, OF NEWTON, MASSACHUSETTS

TOY BOAT

Application filed February 3, 1931. Serial No. 513,065.

This invention relates to improvements in toy boats. More particularly it relates to miniature sailing boats; and it provides for the making of boats of convertible rig.

Hitherto such a boat has been of some particular rig, for example, a sloop or a yawl, or a schooner. The invention provides for such a boat to be rigged in any one of the various styles known in regular, full sized sailing boats. It also provides improvements in the rigging of toy boats, and novel features for the substitution and adjustment of masts and rigging for converting the boat from a sloop, for example, to a schooner, or a yawl.

Sailing boats of the type to which the invention relates may ordinarily vary from 1 foot to 6 feet or so in length. As the position and height of mast, length of boom, and shape and size of sails differ greatly, as between different types of sail boat, a toy boat hitherto has always been of some particular type just as a real boat is, and has not been convertible to another type in any instance of which I am aware. Yet there is much of importance which a person interested in sailing or in building toy boats could enjoy and learn if the same hull could be sailed under different rigs readily interchangeable. Also the value of a single boat to an owner is greatly increased, by providing so that its aspect and behavior can be changed from time to time by changing its type and rig, but the construction of boats as hitherto made has not permitted this.

It is an object of the invention to provide so that a sailing boat of toy character may be converted as desired from one to another type of boat, characterized by one or another number, size, position and type of masts and of sails and rigging. Another object is to provide so that a person may experiment liberally with rigging, and, by setting the masts, etc., at different locations along the hull, discover for himself effects of the differing arrangements. One structural feature resides in the provision of a universal mast-retainer, which permits the setting of a mast or masts in any selected position, or positions, and which permits substitution of rigs to convert the boat from one type to another. It is an incidental feature to provide inexpensive means for securing the masts and for changing the effective length of lines used as stays or sheets; and also for making other rigging connections.

These objects and results may be attained, according to a preferred embodiment of the invention, by employing a medial deck channel, preferably in the form of a channel plate fixed on the deck, for holding the foot of the mast or masts at any place or places along a considerable fore and aft length of the hull. The foot of each mast is shaped to fit nicely and nonrotatably in the channel, and the tops of masts have the usual stays. The stays have each a bowser for drawing and holding the stays taut, as do also the sheets for manipulating the sails. The maker may place marks on the deck or channel to indicate the locations for masts considered to be best, for each type of rig, and then the owner may set the masts accordingly, or as desired. For an example of the convertibility attained, the construction described provides that on a given hull a main sail and jib may be used with a single mast set properly for a sloop rig. Or a two masted schooner rig may be used; or a ketch rig. And all this with the same hull.

It is intended that the patent shall cover, by suitable expression in the appended claims, whatever features of patentable novelty exist in the invention disclosed.

In the accompanying drawings:

Figure 1 is an elevation of a sail boat, rigged as a sloop, embodying features of my invention;

Figure 2 is a detail in perspective of a fragment of the deck channel plate by means of which the rig is convertible, with the parts separated, showing how the base of a mast fits and is held therein; and how a ring-block serving as a ring-bolt may be selectively and adjustably set and secured therein;

Figure 3 is a fragmentary detail view showing one of my devices for securing a sail;

Figure 4 is a detail perspective of a bowser;

Figure 5 is an elevation of the hull of Figure 1 rigged as a schooner; and

Figure 6 is an elevation of the same hull rigged as a ketch.

Figure 7 is a fragmentary side elevation of the main sheet when close hauled.

Referring to the drawings the hull 10 may be of any suitable construction, equipped with a keel 12 and having a rudder 14 operable in any suitable way, as by the tiller 16. A mast and ring-block retainer is indicated at 18, being a plate secured to the deck and extending fore and aft medially thereof. This plate preferably is in the form of a channel with its ends cut and pressed flat as at 20, 20 to provide means at each end, and in its mid-portions as desired, for attachment of the plate to the deck.

Figure 1 shows a sloop which embodies a mast 22, with main sail and jib 24, 26. The heel of the mast is trimmed to a blunt wedge form at 28 (Figure 2) so that it fits nicely in the channel 18 at any location along the channel. The heel may be pierced as at 30, and the side walls of the channel may be pierced with the holes 32, so that a fid or pin 34 may lock the mast-heel in the selected position. Thus the person who is rigging the boat can try the mast at different positions, and can try different lengths of mast and different spread of sail, at any given position, and can discover for himself the diverse effects of various arrangements of the same mast with diffeent sail, and of plural masts variously arranged. The mast may be locked, in the place selected for it, by the pin 34, and may be braced and retained by the stays 36 which run from the top of the mast through eye hooks 38 which hook into screw eyes 40 at the rail. And bowser devices 42 serve for maintaining the lines taut.

The main sail and jib are mounted on the mast much as in a full sized boat.

But I prefer to simplify the various connections and working lengths for stays, sheets, etc., by making the line return upon itself to a bowser 42 running on and holding by friction on the main part of the line. I have found a very inexpensive way to constitute such a bowser by utilizing a metal device whose form is already known in another branch of industry. I refer to the links of bent wire of which small brass chains are commonly made, wherein each link embodies two loops set in planes at right angles to each other. I have found these, when employed singly, to serve excellently for this frictional holding of cord. They can be made by automatic machinery commercially in quantities at very low cost. Such a wire link combines well with hard finished fish line, or mackerel line, to hold the line taut and to make the masts and sails secure. In Figure 3 one such link is shown in detail in the form of an eye hook, used as a sail connector 38, in which one of the wire loops is opened to constitute a hook. A link when used as a bowser 42 preferably has both of its loops closed, as seen in Figure 4. The sheet or stay on which it serves runs through each of its loops, as does the main sheet seen in Figure 7 and after running to the screw edge or hook eye at which it is fastened it is brought back and is tied around the middle of bowser 42 as at 43 in Figure 7. By sliding the bowser along the line, the line may be shortened or lengthened. When the line is taut, its friction where it is woven through the bowser will prevent any slipping of the bowser, and so will maintain the line taut. Or, if there be too much slack to be taken up, as there may be in some instances in the main sheet, the end of the sheet, instead of being attached to the bowser, can be run through both of its loops, and then led to the deck and be layed.

The tiller 16 may be set and held by any desired method; but preferably the main sheet is connected to the tiller by an automatic control which permits of selective leverage setting such that tiller and boom interact. For this purpose there is illustrated in Figures 1 and 7 a simple form of adjustable control. It consists of a slidable element 48 on the tiller, which may be of a type already known, having an eye from which the main sheet may run to an eye on the boom, whence for the taking up of its extra length it runs along the boom to and through an eye at the mast, and thence back along the boom to its bowser 42 seen in Figure 7. Abutments (not shown) at each side of the tiller may limit its swing; and springs (not shown) tend to return it to medial position. Thus by adjusting the bowser 42 along the main sheet, the body may be let out or drawn in; and by setting the position of slide 48 on the tiller, the extent to which an increase of wind will pull over the tiller may be varied, according to the angle at which boom is set, and the leverage desired to balance the wind.

In Figure 5 the same hull is shown converted into a schooner the two masts and the sails being mounted as above described. For the fore mast, a block 56, fixed amidships on the deck channel plate, carries an eye through which passes the sheet that controls boom 54. Or a hook connector 38 may be interposed. As seen in Figure 2 this block 56 is adapted to be selectively set along the channel 18, and to be locked in the selected location by the pin 58. Letting out and drawing in of the boom may be accomplished in a similar manner as has been described for the connection of boom to rudder handle, of Figure 1.

The same hull is illustrated in Figure 6 as being rigged as a ketch, and embodying features above described.

All of these three illustrated different sets of rigging, and other sets at will may be provided for a single hull, to make the one boat capable of being rigged as a schooner, a sloop or a yawl, or otherwise, as and when the owner desires. The conversion may be made readily and quickly.

In each case, the masts can be stepped in various positions, and sails altered, according to the requirements of the respective style of rig, or for experimentation by the operator, so as to attain the proper or any desired balance, in that particular rig, as regards relation of the center of effort to the center of lateral resistance.

Although the retaining plate 18 is provided especially for the adjustable positioning and holding of masts and of blocks for holding the sheets, it can be similarly used for holding other things, as a cabin.

I claim as my invention:

1. A toy boat having means by which the rig may be converted, comprising, in combination with the hull, a mast-retaining device extending for and aft and including mast-engaging means, at a multiplicity of points along its extent, for holding the heel of a mast removably at any of said points.

2. A toy boat having means by which the rig may be converted, comprising, in combination with the hull, a plate of sheet metal extending fixedly fore and aft and including mast-engaging means at a multiplicity of points along its extent, for holding the heel of a mast removably at any of said points.

3. A toy boat having means by which the rig may be converted, comprising, in combination with the hull, a plate of sheet metal formed as a channel, extending for and aft, including mast-engaging means, at a multiplicity of points along its extent, for stepping a mast along said channel, and for holding the heel of a mast removably at any of said points.

4. A toy boat having means by which the rig may be converted, comprising, in combination with the hull, a plate of sheet metal formed as a channel, extending fore and aft, and, at a multiplicity of points along its extent having holes in the sides of the channel, whereby a pin can be thrust across the channel, through the heel of a mast set in said channel, to hold the mast at any of said points.

5. A convertible toy boat comprising a hull with a mast engaging device extending along its deck; rigging, including a mast and stays therefor mounted on said hull, the mast having its heel formed to be held by said engaging device at selective locations along it; and the hull having means for securing the stays in positions suitable for holding the mast in its several selective positions.

6. A convertible toy boat comprising a hull with a mast engaging device extending along its deck; rigging, including a mast and stays therefor mounted on said hull, the mast having its heel formed to be held by said engaging device at selective locations along it; and the hull having means for securing the stays in positions suitable for holding the mast in its several selective positions, and bowsers for adjusting the stay-lines, comprising bent wires having 8-form except that the rings are set at right angles to each other; one of said bowsers being strung on a stay which has variable length, with the stay passing through both of its rings and with an end of the line turned back upon itself from the end of the stay and secured to the bowser; whereby the stay line may be drawn taut by sliding the bowser therealong, and will be maintained taut by frictional grip of the bowser.

7. A convertible toy boat comprising a hull with a channel extending along its deck; and a mast and an eye-block, both fitting therein at a multiplicity of locations; the mast having a boom and the boom having a sheet; and the eye-block being adapted to hold the sheet.

8. A convertible toy boat comprising a hull with a channel extending along its deck; a mast having its heel fitting said channel at any of a multiplicity of selective locations along it; means for locking said mast in its selected position; a boom and sheet for the mast; and means for attaching the sheet at said channel in any of a multiplicity of selective locations along it.

9. A convertible toy boat comprising the combination of a hull with mast-heel-holding means thereon extending fore and aft through the whole of a region which includes the mast locations of a plurality of rigs, said means including mast-engaging formations, at a multiplicity of points along it, for holding the heel of a mast at any of said points.

10. In a toy boat, the combination with the hull of means adapting the hull for interchangeability of rigs; said means being a device on the deck, providing a region extending fore and aft on the hull a distance to include the positions of masts of a plurality of different rigs, and including mast-holding formations at a multiplicity of points along said device for holding the heel of a mast at any of said points.

11. A convertible toy boat comprising a hull, means extending fore and aft, including mast-engaging formations, at a multiplicity of points along its extent, for retaining a mast at any of said points; and a plurality of masts, each comprising a part of a rig for the boat; said masts being removably stepped along said means, and each being stayed, at a selected one of said mast-engaging formations.

Signed at Boston, Massachusetts, this fifteenth day of December, 1930.

ALFRED M. DOERFLER.