

[54] LOCK PINTLE FOR A RUDDER

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[22] Filed: June 29, 1973

[21] Appl. No.: 374,882

[52] U.S. Cl. 114/172, 114/165

[51] Int. Cl. B63h 25/00

[58] Field of Search 114/165, 172, 162; 16/177,
16/171; 24/230 F, 230 SC

[56] References Cited

UNITED STATES PATENTS

444,028 1/1891 Stuart 114/165

502,723 8/1893 Jackson 114/165
1,719,891 7/1929 Kual 24/230 SC
3,217,684 11/1965 Lapidaz 114/165

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[57] ABSTRACT

A lock pintle comprising a bracket attachable to a rudder of a boat, a pintle attached to the bracket, and a locking element attached to the pintle and movable generally radially between a locking position and a releasing position. The locking element is resiliently urged toward the locking position.

10 Claims, 5 Drawing Figures

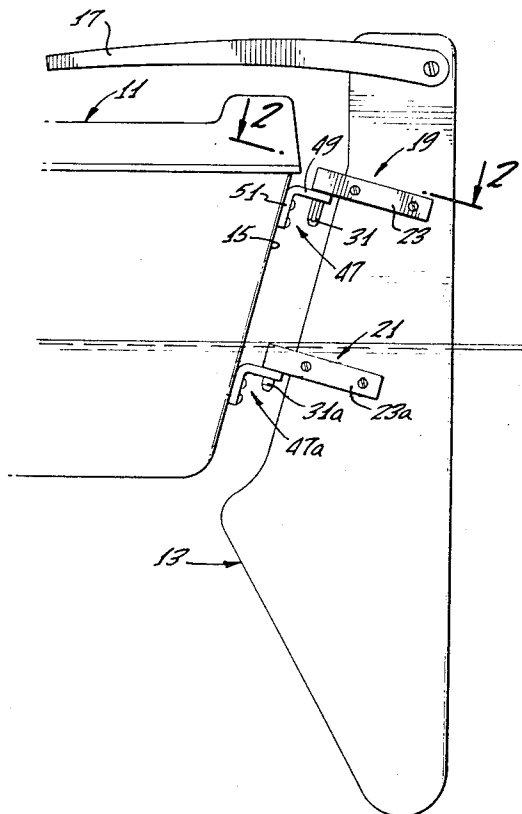


FIG. 1

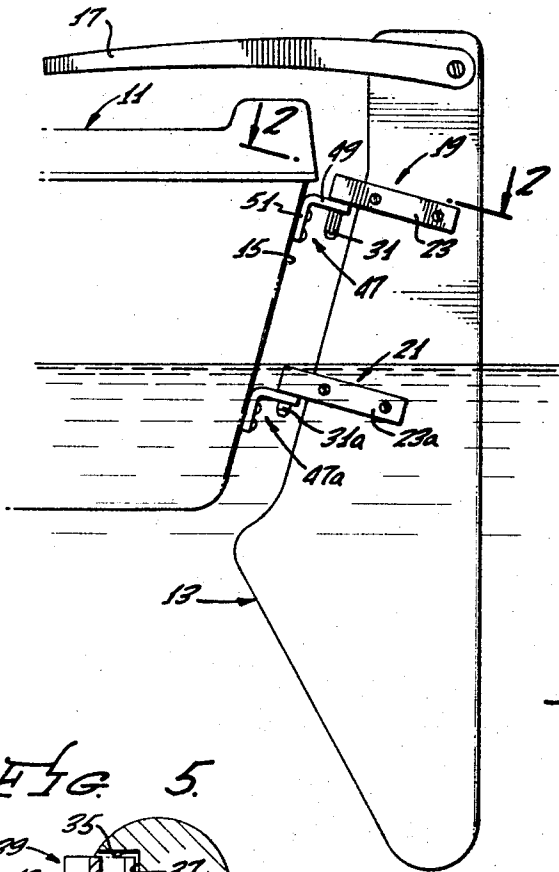


FIG. 5

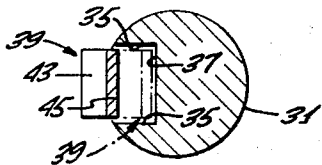


FIG. 3

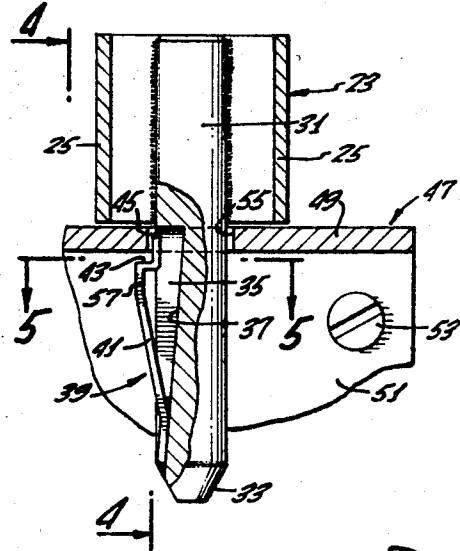


FIG. 4

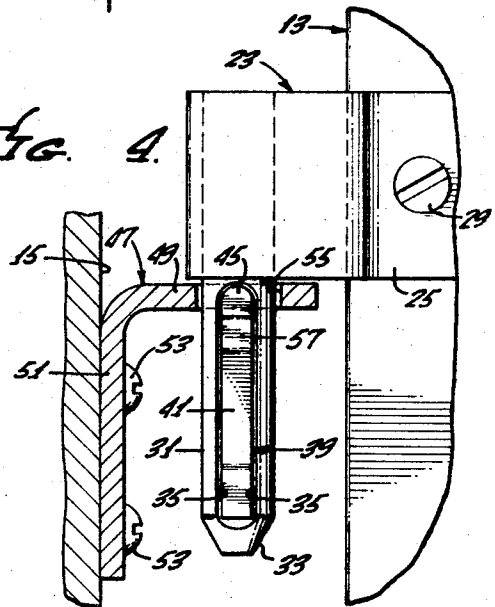
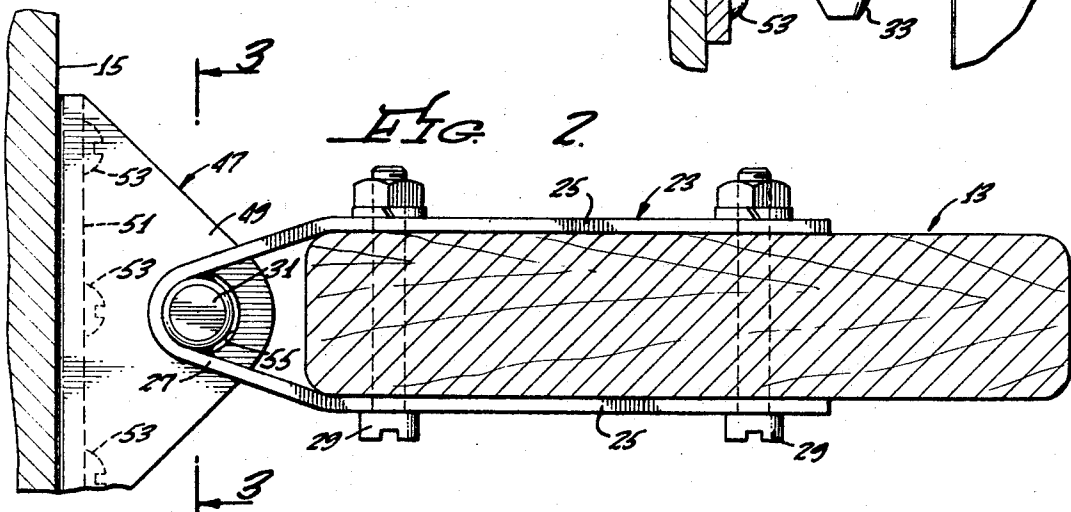


FIG. 2



LOCK PINTLE FOR A RUDDER

BACKGROUND OF THE INVENTION

Boats are typically steered in a well known manner by a rudder which is pivotally mounted on the aft end of the boat. One prior art mechanism for mounting the rudder of the boat includes first and second brackets attached to the rudder and first and second pintles mounted on the first and second brackets, respectively. The boat has two apertured gudgeons or mounting members, the apertures of which pivotally receive the pintles, respectively, thereby pivotally mounting the rudder.

One problem relates to the retention of the pintle on the gudgeons. With this prior art device, a pin mounted on the boat cooperates with a groove in the pintle to prevent unintentional withdrawal of the pintle. The pin projects through an aperture in the back of the boat.

With this prior art construction, it is difficult to properly align the various elements thereof such as the pin and the groove in the pintle. Removal or demounting of the rudder is made difficult in that the pin can only be withdrawn by someone who is in the boat. It is also undesirable to have the opening in the boat which is necessary for pin mounting purposes. Finally, this prior art construction is relatively expensive.

SUMMARY OF THE INVENTION

The present invention generally overcomes these disadvantages in providing a rudder mounting device which automatically locks the pintle in the gudgeon or other mounting member in response to insertion of the pintle a predetermined distance into the aperture of the mounting member. The lock pintle of this invention positively prevents inadvertent removal of the rudder, but materially facilitates intentional rudder removal by someone inside or outside of the boat. The lock pintle is of simple construction, will not jam, and eliminates the alignment problems referred to above.

To accomplish the locking function, a lock or locking element is attached to the pintle. The locking element is movable generally radially of the pintle between a locking position and a releasing position. In the locking position, the locking element locks the pintle against removal from the aperture of the mounting member. In the releasing position, the locking element allows the pintle to be withdrawn from the aperture of the mounting member. The locking element is resiliently urged radially outwardly toward the locking position. This latter function can advantageously be carried out by constructing the locking element of resiliently deformable material.

The resilient means normally maintains the locking element in the locking position. In order to provide for automatic operation, cam means are provided on the locking element which cooperate with the surface defining the aperture of the mounting member to cam the locking element radially inwardly during the initial insertion of the pintle into such aperture. The cam means may include a cam surface on the locking element. The cam surface cams the locking element radially inwardly toward a releasing position during the insertion of the pintle into the aperture. When the cam surface clears the aperture, the locking element is resiliently snapped outwardly. A shoulder is provided on the locking element to prevent removal of the pintle from the mount-

ing member when the locking element is in the locking position.

To allow for a relatively close fit between the pintle and the aperture of the mounting member, the lock element can be recessed in the pintle. To accomplish this, a groove can be formed in the peripheral wall of the pintle with the groove opening radially outwardly. The lock element lies within and extends along this groove.

In mounting a rudder utilizing the present invention, it is preferred to employ two pintles. It is only necessary that one of these pintles have a locking element.

The invention can best be understood by reference to the following description taken in connection with the accompanying illustrative drawing.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a fragmentary side elevational view of a boat and rudder.

FIG. 2 is an enlarged fragmentary sectional view taken generally along line 2—2 of FIG. 1.

FIG. 3 is a fragmentary sectional view taken generally along line 3—3 of FIG. 2.

FIG. 4 is a fragmentary sectional view taken generally along line 4—4 of FIG. 3.

FIG. 5 is a sectional view taken generally along line 5—5 of FIG. 3.

DESCRIPTION OF THE PREFERRED EMBODIMENT

FIG. 1 shows a boat 11 having a rudder 13 pivotally mounted on a back wall 15 of the boat at the aft end thereof. The rudder 13 can be pivoted by a lever 17 which is attached to the upper end of the rudder. The boat 11 and the rudder 13 may take different forms, and the construction shown in FIG. 1 is purely illustrative.

The rudder 13 is mounted on the back wall 15 by mounting units 19 and 21. Except as expressly noted herein, the mounting units 19 and 21 may be identical.

The mounting unit 19 includes a bracket 23 of generally U-shaped configuration in plane (FIG. 2). The bracket 23 may be constructed of a single metal strap bent into an appropriate configuration. In the embodiment illustrated, the bracket 23 includes a pair of legs 25 integrally joined by a connecting portion 27. The bracket 23 receives a portion of the rudder 13 as shown in FIG. 2 and is attached to the rudder by threaded fasteners 29.

A pintle 31 is mounted on the connecting portion 27 of the bracket 23 in any suitable manner such as by welding. In the embodiment illustrated, the pintle 31 is in the form of a metal pin having a tapered or conical lower end 33 (FIG. 3) and a longitudinally extending, radially opening recess or slot 35. The slot 35 has an end wall 37 which tapers radially inwardly as it extends axially upwardly as viewed in FIG. 3.

A locking element 39 is positioned within the slot 37 and suitably attached at its lower end to the pintle 31 in any suitable manner such as by welding or spot welding. The locking element 39, in the embodiment illustrated, is in the form of a resiliently deformable metal strip. However, the locking element 39 could take other forms such as, for example, the form of a wire-like element.

The locking element 39 has a cam surface 41 which slopes radially outwardly as it extends axially upwardly as viewed in FIG. 3. The locking element 39 has a shoulder 43 above the cam surface 41. The shoulder 43 extends generally radially with respect to the pintle 31. The locking element 39 also has a retaining tab 45 which extends axially of the pintle 31 and which is connected to, and lies immediately above, the shoulder 43.

Because the locking element 39 is resilient, it is movable between a locking position shown in FIG. 3 and in full lines in FIG. 5 and a releasing position shown in dashed lines in FIG. 5. The locking position lies radially outwardly of the releasing position. The inherent resilience of the locking element 39 biases the locking element toward the locking position. If desired, a separate resilient element or spring could be provided to augment or replace the resilient characteristic of the locking element 39. As shown in FIG. 3, the slot 35 is sufficiently long to accommodate the full length of the locking element 39.

The pintle 31 is perpendicular to the bracket 23. Specifically, the pintle 31 is perpendicular to the plane of the bracket 23 in which its U-shaped configuration is seen. The pintle 31 is attached to the bracket 23 at the upper regions of the pintle. The pintle 31 projects downwardly from the bracket 23.

The mounting unit 19 also includes a mounting member or mounting section in the form of a gudgeon 47. The gudgeon 47 is a metal bracket having generally perpendicular legs 49 and 51. The leg 51 is suitably attached as by screws 53 (FIG. 4) to the back wall 15. The leg 49 has an aperture 55 therein sized to receive the pintle 31. As used herein, the terms "mounting member" and "mounting section" are not limited to the gudgeon 47 but include any suitable structure associated with a boat for pivotally mounting the pintle 31.

Portions of the mounting unit 21 corresponding to portions of the mounting unit 19 are designated by corresponding reference numerals followed by the letter a. The mounting unit 21 is identical to the mounting unit 19 except that the length of the pintle 31a projecting downwardly from the bracket 23a is less than the length of the pintle 31 projecting downwardly from the bracket 23. In addition, the pintle 31a does not have the slot 35 or the locking element 39.

To install the rudder 13 on the boat 11, the rudder is appropriately supported and the pintles 31 and 31a are aligned with the apertures in the gudgeons 47 and 47a, respectively. The simultaneous alignment of the pintles 31 and 31a with the apertures of the gudgeon 47 and 47a is facilitated by the relatively short distance that the pintle 31 projects from beneath its bracket 23a.

With this alignment maintained, the rudder 13 is moved downwardly and the tapered end 33 of the pintle 31 guides the pintle 31 into the aperture 55 of the gudgeon 47. As this downward movement of the rudder 13 and the pintle 23 progresses, ultimately the surface defining the aperture 55 engages the cam surface 41. The engagement between the surface of the aperture 55 and the cam surface 41 is made possible because the cam surface 41 projects radially outwardly of the slot 35.

This cooperation between the surface of the aperture 55 and the cam surface 41 cams the locking element 39 radially inwardly toward the releasing position.

The inward camming of the locking element 39 continues until the upper edge of the cam surface 45 passes below the upper edge of the aperture 55. Thereafter, an axial section 57 of the locking element 39 engages the surface of the aperture 55. The axial section 57 extends axially of the pintle 31 in the locking position of the locking element 39. The length of the axial section 57 is slightly greater than the axial length of the surface defining the aperture 55.

Ultimately, the axial section 57 passes completely through the aperture 55, and thereafter, the resilience of the locking element 39 causes the locking element to automatically snap to the locking position shown in FIG. 3. In the locking position, the shoulder 43 underlies the leg 49 of the gudgeon 47 radially outwardly of the aperture 55. This prevents lifting of the pintle 31 out of the aperture 55. The bracket 23 rests on the upper surface of the leg 49 of the gudgeon 47 to prevent further movement of the rudder downwardly. The axial spacing between the upper surface of the shoulder 43 and the lower surface of the bracket 23 is selected to just accommodate the thickness of the leg 49.

In the locking position, at least a portion of the retaining tab 45 is received within the aperture 55. This prevents external forces from bending the locking element 39 radially outwardly of the position shown in FIG. 3.

During the mounting of the rudder 13, the pintle 31a ultimately enters the aperture of the gudgeon 47a. The pintle 31a is locked against removal from the aperture of the gudgeon 47a by the locking element 39 which is attached to the pintle 31.

To remove the rudder 13, the locking element 39 is manually moved radially inwardly to the releasing position. This allows the pintle 31 to be moved upwardly out of the aperture 55 and consequent demounting of the rudder.

Although exemplary embodiments of the invention have been shown and described, many changes, modifications and substitutions may be made by those having ordinary skill in the art without necessarily departing from the spirit and scope of this invention.

I claim:

1. A lock pintle for attaching a rudder to a mounting member of a boat wherein the mounting member has an aperture therein, said lock pintle comprising:

a bracket attachable to the rudder;
a pintle;

means for attaching the pintle to the bracket with a portion of the pintle projecting away from the bracket, said portion of said pintle being receivable in the aperture of the mounting member to at least assist in mounting the rudder for pivotal movement relative to the boat;

a locking element attached to the pintle and movable generally radially thereof between a locking position in which the locking element locks said portion of the pintle against removal from the aperture of the mounting member and a releasing position in which the locking element allows said portion of the pintle to be withdrawn from the aperture of the mounting member, said locking position being radially outwardly of said releasing position; and

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means for resiliently urging said locking element radially outwardly toward said locking position.

2. A lock pintle as defined in claim 1 wherein the locking element includes a resilient spring element and said last mentioned means includes the resilience of the spring element.

3. A lock pintle as defined in claim 1 wherein said bracket is generally U-shaped in plan and includes first and second legs interconnected by a connecting portion, said U-shaped bracket being adapted to receive therein at least a portion of the rudder, said attaching means joining the pintle to said connecting portion.

4. A lock pintle as defined in claim 1 wherein said pintle has a radially opening recess, said locking element including a resilient spring element extending along said recess, said spring element defining a shoulder projecting from said recess in said locking position and adapted to cooperate with the mounting member in said locking position to lock the pintle in the aperture of the mounting member, said shoulder lying sufficiently within said recess in said releasing position to allow said portion of the pintle to be withdrawn from the aperture of the mounting member, said resilient means including the resilience of the spring element.

5. A lock pintle as defined in claim 1 wherein said locking element includes a retaining tab receivable in the aperture of the mounting member at least in said locking position for retaining the locking element in said locking position.

6. A lock pintle as defined in claim 1 including a cam surface on said spring element, said cam surface in said locking position projecting radially outwardly as it extends from the end of the pintle remote from the bracket toward said shoulder, said locking element including a retaining tab receivable in the aperture of the mounting member in said locking position.

7. A lock pintle as defined in claim 1 wherein said pintle has a longitudinally extending, radially opening recess with an end wall, said locking element includes a resiliently deformable spring strip extending along said recess, said locking element being movable toward

said end wall in moving from the locking position to the releasing position and being at least partially in said recess at least in said releasing position, said last mentioned means including the resilience of said spring strip.

8. A lock pintle as defined in claim 7 wherein said spring strip includes a retaining tab receivable in the aperture of the mounting member at least in said locking position for retaining the spring strip in said locking position.

9. A lock pintle as defined in claim 8 wherein said end wall is inclined radially inwardly as it extends longitudinally, said spring strip defines a shoulder adjacent said retaining tab.

10. In combination:

a boat having a first rudder mounting section with an aperture therein;

a rudder;

a bracket attachable to the rudder;

a pintle;

means for attaching the pintle to the bracket with a portion of the pintle projecting away from the bracket, said portion of said pintle being receivable in the aperture of the first rudder mounting section to at least assist in mounting the rudder for pivotal movement relative to the boat;

restraining means on said pintle and said first rudder mounting section responsive to the insertion of said portion of said pintle a predetermined distance into said aperture for restraining said portion of the pintle against removal from the aperture;

said restraining means including an integral resilient spring strip deformable radially from a first position in which it restrains the pintle against removal from the aperture to a second position in which it allows insertion of the pintle into, and removal of the pintle from, the aperture; and

at least one side of said spring strip being fully exposed and including a cam surface for camming the spring strip to said second position.

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