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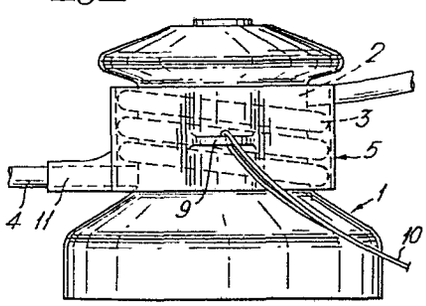
(54) Winch and attachment therefor.

(57) A removable attachment for a winch has a C-shaped member (5) which fits over the drum (2) of the winch (1) and applies a radially inward force to runs (3) of a rope around the drum (2). The C-shaped member (5) is resilient and its lips are pressed over the rope on the drum (2) so that it extends more than half way round the drum. The C-shaped member (5) has a projection (11) extending from one lip to abut against the lead run (4) of the rope, which prevents free rotation of the C-shaped member (5) on the drum. The member (5) may be frusto-conical to conform to the outline of a conventional winch drum. In this way a large variety of standard hand-powered winches can easily and quickly be converted to ones having a self-tailing action.

Fig.1.



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WINCH AND ATTACHMENT THEREFOR

This invention relates to winches of the hand-powered type as used for example in yachts and sailing vessels.

It is particularly concerned with making such winches "self-tailing", that is to say allowing a rope to be coiled more or less loosely on the winch drum to become automatically tautened onto the drum by the action of turning the drum.

Rendering such winches self-tailing has usually in the past involved redesign of the winch. Usually and most efficiently a separate, narrow self-tailing channel was provided adjacent to one end of the drum to grip the rope while it consolidated itself on the drum. These designs are efficient but are elaborate; and there is a need for a cheap yet equally efficient means for converting an ordinary winch to a self-tailing one.

In this invention we provide a winch in which radially inward pressure is applied to a rope coil on the drum. This pressure is applied by a removable attachment which rides on the drum over the coil of rope and is prevented from rotating with the drum by engaging one of the runs of rope.

The most convenient form of such an attachment is that of an axially elongate C-Clip (like a bicycle clip in end view). The elongate surface of the attachment may be part cylindrical or frusto-conically tapered. Once a coil has been formed on the winch, such a clip is pressed over it so that ends pass over the diameter of the coil and its resilience then holds it on the winch. The clip has means for bearing against one of the runs of rope wound on the winch. This may be in the form of a projection which has a substantial flat or concave surface which can abut against the rope of the lead run (the run which connects the load to

the winch) and the rest of the clip grips the rope onto the winch drum.

The clip may be attached to the yacht or other vessel by a lanyard to prevent its loss when not riding on the winch. This lanyard may also be used to prevent rotation of the clip on the winch drum when the clip is in use.

The invention includes the provision of such a removable attachment for the purpose of rendering a hand-powered winch self-tailing.

Two embodiments of the present invention will now be described by way of example with reference to the accompanying drawings wherein:

Figure 1 is a side view of a winch having a part cylindrical attachment;

Figure 2 is a top view of the winch of Figure 1;

Figure 3 is a side view of a winch having a frusto-conically tapered attachment; and

Figure 4 shows a perspective view of the attachment shown in Figure 3.

Figures 1 to 3 show a conventional single- or multi-speed winch 1 with a drum 2 on which is wound a coil 3 of rope. A lead run 4 of the rope will be under tension between the drum 2 and the load attached to the rope. Separately from the winch 1 there is provided means removably attached to the winch so as to ride on its drum and exert inward pressure on the coil 3.

In Figures 1 and 2, this attachment is a removable clip 5 of which the end view (Figure 2) resembles that of a

bicycle clip. The clip 5 has a slightly extended C-shape 6 with outwardly flared ends 7. The width of the clip is somewhat less than the length of the drum 2 between its end flanges. Midway around the length of the clip there is an indentation 8 bridged on the outside by a lug 9. A string or chain 10 runs from the lug to an anchor point on the vessel. It stops the clip 5 from getting lost or falling overboard when it is removed from the winch. This string or chain 10 may also be secured to a fixed point adjacent the winch and tension in the string or chain 10 prevents rotation of the clip 5.

One of the ends 7 destined to be next to the run 4 is extended into a projection 11 which receives and bears against the rope of the run 4. This is to prevent free rotation of the clip 5 when fitted on the winch (the direction of rotation of the drum is clockwise as seen in Figure 2).

The user simply coils rope more or less loosely round the drum and then presses the clip over the coil from the direction of the lug 9. The flared ends 7 assist this pressing on, and open to pass over the diameter of the coil. In the condition seen in Figure 2 the clip is held on the coil by these ends and the resilience of the clip, and applies radial pressure inwardly along three lines; lines 12, 13 adjacent ends 7 and line 14 due to the indentation 8. This pressure renders the winch effectively self-tailing. The clip can be kept on the winch once the coil 3 has consolidated under load or can be removed.

It is noticeable that no separate rope-stripping means need be provided since in the region between the ends 7 not covered by the clip there is no hindrance to the rope clearing itself from the drum in the normal way.

The second embodiment is shown in Figures 3 and 4.

Features of the modified clip are indicated by dashed numerals. In this embodiment, the clip 5' is generally similar to that shown in Figures 1 and 2 except that it is frusto-conical. In this way the clip can be made to fit a tapered winch drum 2'. This arrangement is preferred. It is not necessary that the angle of taper of the clip 5' (if any) corresponds exactly to that of the drum 2'. There is some advantage in having a slightly smaller angle of taper so that the pressure applied to the turns of the rope (3') between the clip 5' and the drum 2' is higher in the upper region of the drum 2' to increase the gripping of the rope 3' between the clip 5' and the drum 2'. Alternatively, a clip may be provided with a negative taper, i.e. decreasing upwardly so that this effect of increased gripping may be achieved with a parallel sided drum.

In the clip 5' shown in Figures 3 and 4 there is a lug 13' on the flared end 7' above the projection 11' and which may be used to remove the clip 5' from the drum 2'. The free run 15' (Figure 3) of the rope extending from the clip 5' can be pulled back to exert a force on the lug 13' tending to pull the clip 5' off the drum 2'.

The clip may be made of a suitable plastics material, e.g. Delrin. To reinforce this material, and also to increase the resilience of the clip, glass fibres may be incorporated into the clip. Alternatively, the clip may be made of metal.

Gripping can be increased by having the clip of a diameter such that it grips the turns of the rope uniformly around the drum (rather than at a series of points as in Figure 2) thus increasing the force pressing the rope onto the drum. However, one must avoid an unacceptable increase in the friction between the rope and clip and a number of arrangements may be used to reduce the friction between the rope and clip relative to the friction between rope and drum. Firstly, a series of projections or bumps similar

to indentation 8 in Figure 2 may be provided around the inner surface of the clip, these projections acting as a series of pressure pads around the clip. Secondly, rollers may be provided at spaced locations around the clip but such an arrangement is complicated and expensive. Thirdly, the inner surface of the clip may be coated with a low friction material, or even the entire clip made of the low friction material. PTFE is one suitable material and a coating of this may be formed by PTFE tape.

CLAIMS:

1. A winch (1,1') having an attachment to apply a radially inward pressure to turns of rope (3,3') on the winch drum (2,2'), characterised in that:

the attachment has an axially elongate resilient C-shaped member (5,5') removably clipped to the winch drum (2,2') and held by its resilience over turns of rope (3,3') thereon, the attachment also having means (11,11') for bearing against one of the runs (4,4') of rope to the winch drum (2,2').

2. A winch according to Claim 1, wherein the member (5,5') is shaped so that it applies pressure to turns of rope on the winch drum which is greater towards the top of the winch (1,1').

3. A winch according to Claim 1 or Claim 2, wherein the attachment has a lanyard (10,10') securable to a member fixed relative to the winch drum (2,2').

4. An attachment for a winch (1,1') to apply a radially inward pressure to turns of rope (3,3') on a winch drum (2,2'), characterised in that:

the attachment comprises an axially elongate resilient C-shaped member (5,5') adapted to be clipped by its resilience to and removed from the winch drum (2,2') so as to lie over turns of rope (3,3') thereon, the attachment having means (11,11') for bearing against one of the runs (4,4') of the rope to the winch drum (2,2').

5. An attachment according to Claim 4, wherein the C-shaped member (5,5') is frusto-conically tapered.

6. An attachment according to Claim 4 or Claim 5, wherein means (13') are provided on said C-shaped member (5') adapted to be used with the other of the runs of the rope for stripping the attachment from the winch drum (2').

7. An attachment according to any one of Claim 4 to 6, wherein at least the inner surface of the C-shaped member (5,5') is provided with means for reducing friction between the C-shaped member (5,5') and turns of rope on the winch drum (2; 2').

8. An attachment according to Claim 7, wherein the friction producing means is a plastics material.

9. An attachment according to any one of Claims 4 to 8, wherein the C-shaped member (5,5') is made of a plastics material reinforced with glass fibre.

Fig.1.

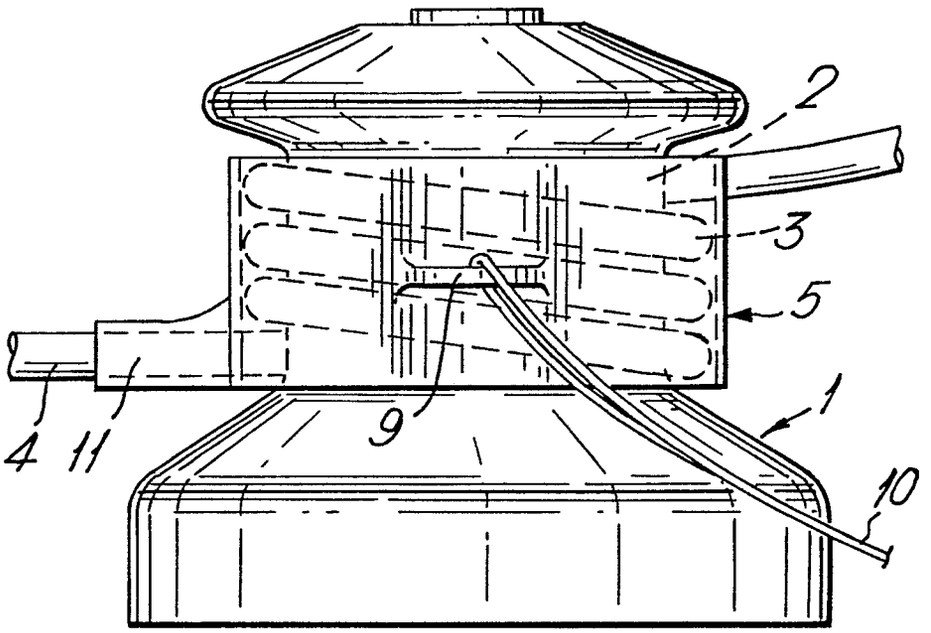

Fig.2.

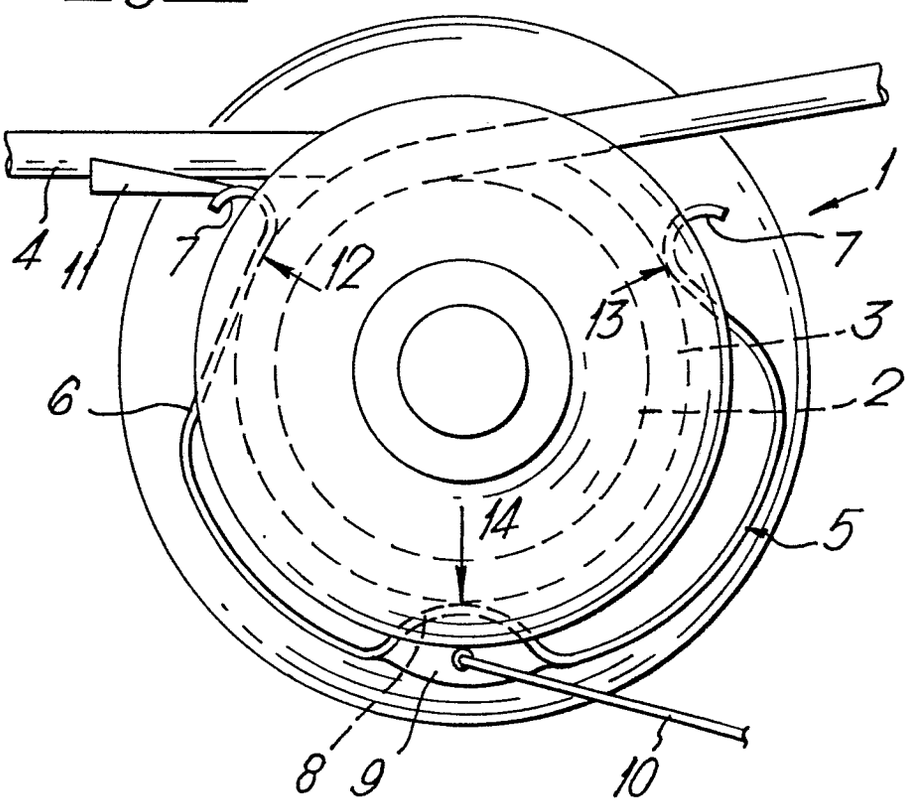

Fig. 3.

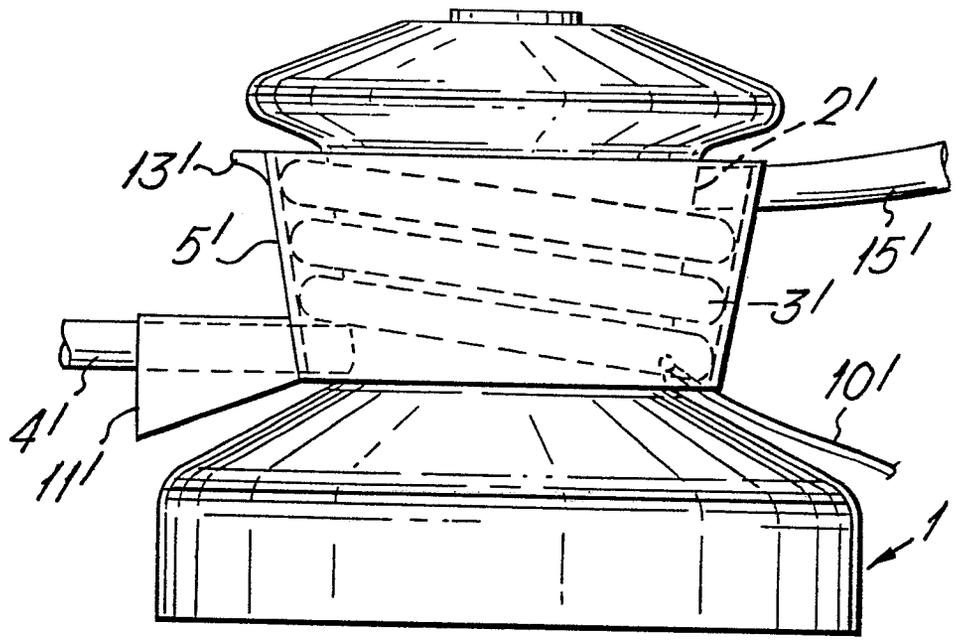

Fig. 4.