

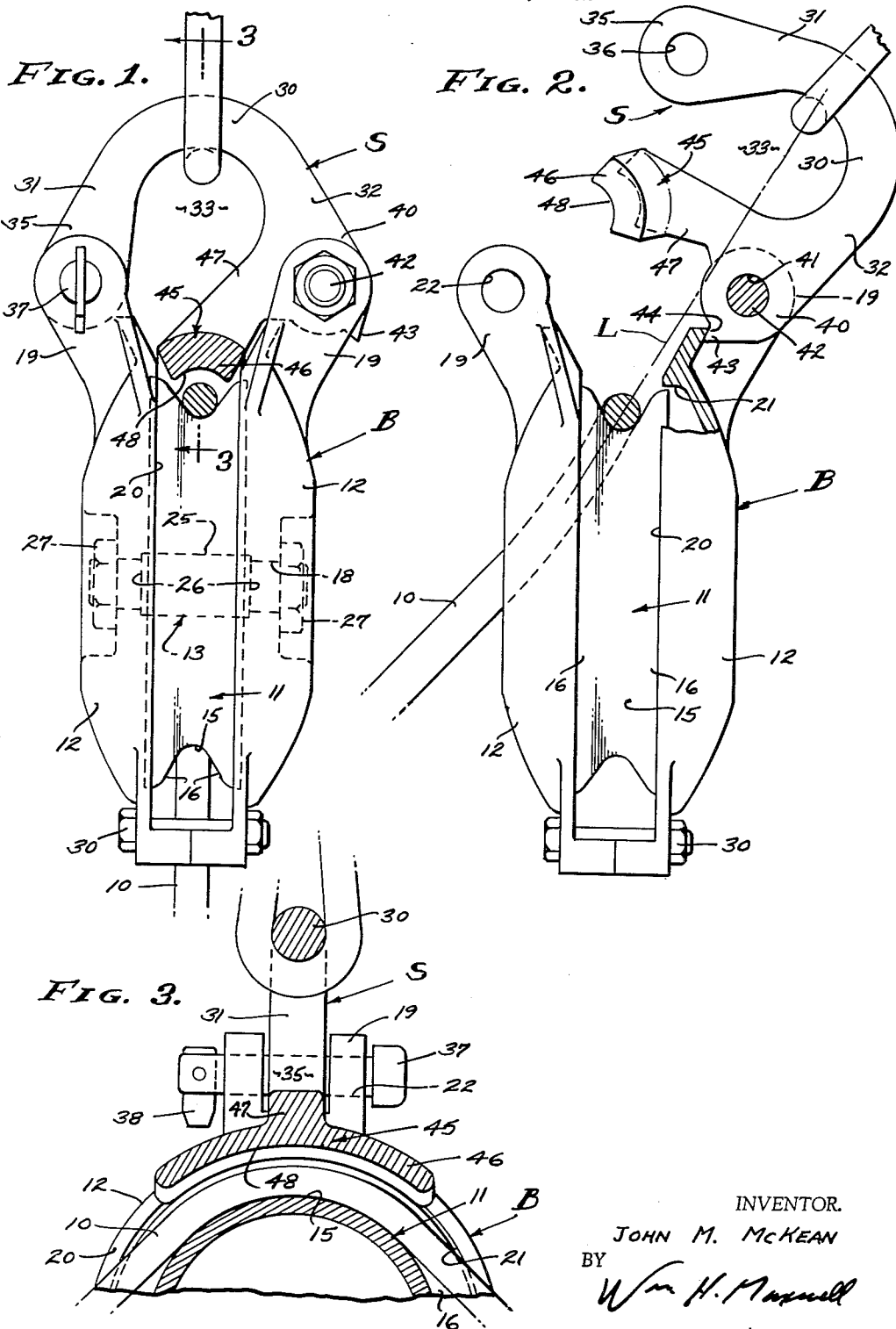
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LOGGING BLOCK SUSPENSION AND LINE RETAINER

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3,199,841 LOGGING BLOCK SUSPENSION AND LINE RETAINER

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This invention relates to a snatch block, or sheave block, and is particularly concerned with a suspension element that confines a line to the sheave of the block.

Sheave blocks are used for a wide variety of purposes, and a typical purpose is for logging, or the like. A logging block, as such, requires a quickly removable and replaceable closure for the confinement of the line to the sheave, and this closure is usually incorporated in the suspension head structure of the block. Heretofore, special head structures have been provided, some divided bilaterally, some with additional key members that extend between the side frames, and some with separate gate members that drop into place between the side frames of the block, etc. In any case, the prior art resorts to multiple parts and the head part which closes the opening of the block is characteristically a transverse bar-shaped member removed radially from the periphery of the sheave. As a result, the shortcomings of the prior art reside in multi-part structures that do not properly confine the line to the sheave, but permit the line to whip away from the sheave.

A general object of this invention is to provide a single part multi-purpose suspension member for a sheave block which serves in the capacity of a shackle and also in the capacity of a line retainer, and particularly a retainer that confines the line to an operating position within the periphery of the sheave.

It is an object of this invention to provide a sheave block suspension in the basic form of a shackle and which incorporates a line guide therein, whereby with one releasing operation of the shackle either, or both, the support for the sheave block and line can be removed and/or replaced.

It is still another object of this invention to provide a shackle that is operable to release the line from the sheave without releasing the support that carries the entire sheave block, and a shackle that forms a hook when in open position.

The various objects and features of this invention will be fully understood from the following detailed description of the typical preferred form and application thereof, throughout which description reference is made to the accompanying drawings, in which:

FIG. 1 is an elevation of the sheave block and suspension, shown in a closed operating position.

FIG. 2 is a view similar to FIG. 1 and shows the suspension member in an extreme open position and forming a hook for continued support of the block structure.

FIG. 3 is a fragmentary view taken as indicated by line 3—3 on FIG. 1.

The present invention is specifically concerned with snatch blocks or sheave blocks used for passing a moving line 10. The line 10 may be a rope or cable, for example a wire rope, of uniform diameter and flexibility so as to bend over a sheave 11. In practice, the degree of bend over the sheave varies greatly up to 180°, a complete return of the line 10. And, so long as the line 10 remains tensioned the said line will normally remain on the sheave. However, in use a line 10 often becomes slack and with the result that it separates from the periphery of the sheave 11.

In the drawings a sheave block B is illustrated and in-

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volves generally, the sheave 11, a pair of opposite side frames 12, and a shaft assembly 13. The sheave 11 is a pulley shaped wheel that revolves between the spaced side frames 12, and the shaft assembly 13 extends between the side frames 12 to carry the sheave 11.

The sheave 11 is a grooved wheel or pulley having a circumferential groove 15 with side flanges 16. The groove 15 and side flanges 16 form a valley shaped peripheral channel, the groove 15 being arcuate and of a radius to properly receive and seat the diameter of the line 10, as may be required. The flanges 16 flare radially outward and well beyond the outermost periphery of the line 10 when it is properly seated in the groove.

The side frames 12 are alike and each is a half shell of disc formation having a central bore 18 and an upstanding ear 19. The frame 12 has a flat inner face 20 with a bore 21 therein that receives the outer diameter of a flange 16 with some clearance. Thus, the flanges 16 can enter partially into the bores 21 without engagement with the side frames 12. A feature of the construction is that the ears 19 of the two side frames 12 are substantially spaced when the side frames are in position at opposite sides of the sheave 11. As shown, therefore, the ears project axially away from the face 20 as they extend radially. As a result, the ears 19, being alike, spread or diverge outwardly as they extend upward from the disc shaped side frames 12.

In order to accommodate the suspension member S later described the ears 19 are bifurcated alike to leave an opening from the reception of the suspension member by each ear. Further, the ears 19 are provided with fastener openings 22 to receive pin type fasteners on axes that are spaced and parallel and equidistant from both the sheave axis and rotational plane of the sheave.

The shaft assembly 13 is provided to join the side frames 12 and to rotatably carry the sheave 11. There is a shaft 25 with an enlarged center portion to rotatably journal the sheave 11, as on antifriction bearings (not shown) and the said enlarged portion presents opposite shoulders 26 that properly position the side frames 12. Projecting from each shoulder 26 there is a threaded portion, one centered in each bore 18, and secured to the side frame 12 by means of a nut 27. Thus the frames 12 are held together, and they are also secured as by radially displaced fasteners 30 at the lower part of the structure, as clearly indicated.

With the structure thus far described there is a sheave 11 rotatable on bearings supported by spaced frames 12, with ears 19 projecting from the frames to receive a suspension member S.

In accordance with this invention there is provided the suspension member S in the basic form of a shackle and serving in the capacity of a shackle, a hook, a closure for the block, and as a guide to retain the line 10 in the groove 15 and within the confines of the flanges 16. As shown, the member S is a casting or forging, or it can be fashioned by any other suitable method, of arch-shaped inverted U-configuration. The member S has, therefore, an arcuate center section 30 terminating at opposite end sections 35 and 40 and in addition it has a line guide section 45 projecting from one of the end sections, the section 40.

It is the center section 30 that is U-shaped with opposite legs 31 and 32 that are substantially parallel, and with the result that the throat opening 33 is of substantial depth, for example of a depth equal to about the distance between opposite ears 19.

The end sections 35 and 40 are essentially alike and each is flat sided with an opening therethrough to pass a fastener. That is, the sections 35 and 40 are flattened so as to enter between the bifurcations of the ears 19, and with openings 36 and 41 that are spaced and parallel and posi-

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tioned so as to align with the said aligned openings in the ears 19. A permanent bolt type fastener 42 is secured in place through the opening 41 and registering each openings, while a quickly releasable pin type fastener 37 is placed through the opening 36 and registering each openings. The said fastener 37, as shown in FIG. 3 has a swivelly connected tongue 38 that normally depends by gravity and which prevents withdrawal of said fastener.

A stop 43 projects from the section 40 so as to engage the side frame at 44 and thereby stop the member S as positioned in FIG. 2. In this opened position the supporting direction of force leads to the groove 15 more or less as indicated by the phantom line L, in which case the member S acts as a hook. In practice, the stop 40 limits movement of member S so that it has a positive predetermined open position, and it is hook-shaped when considered relative to the pin connection at the fastener 42.

In carrying out the invention the line guide section 45 is provided and which comprises an arcuate segment 46 that occupies the space between the side frames 12 and at or just outside of the periphery of the sheave 11. The segment 46 overlies or follows the contour of the sheave periphery. When the member S is in working position and held to the ears 19 by both fasteners 37 and 42, the section 45 has an arm 47 that projects to support the segment 46 positioned as above specified. The segment 46 need not touch either the side frames 12 nor the sheave 11 and in its preferred form has a concave inner face 48 adapted to slidably engage the line 10 when said line moves (or is slack—or leaves the sheave).

Many geometric refinements can be included, as illustrated, and it is the member S comprising the sections 35, 40 and 45 and the segment 46 and arm 47 that is one integral part. As hereinabove pointed out, the member S of the present invention acts in various capacities as a shackle, as a hook, as a general closure for the sheave block and as particularly specified in the capacity of an arcuate line guide that retains the line 10 between the flanges 16. In no case can the line 10 escape beyond the periphery of the sheave 11 when the member S is in operating position as it is clearly illustrated in FIG. 1.

Having described only a typical preferred form and application of my invention, I do not wish to be limited or restricted to the specific details herein set forth, but wish to reserve to myself any modifications or variations that may appear to those skilled in the art and fall within the scope of the following claims:

Having described my invention, I claim:

1. A removable suspension member for a sheave block having a sheave rotatably journaled between a pair of like side frames, there being oppositely positioned ears and one projecting from each side frame, and including:

- (a) a shackle extending between and pivotally fastened to one of the ears and releasably fastened to the other ear,
- (b) an arcuate guide carried by the shackle to overlie the periphery of the sheave when the shackle is positioned to extend between said ears and for retaining a line at the sheave,
- (c) and a stop to limit pivotal movement of the shackle at said one ear so as to form an open hook thereof when the shackle is released from the said other ear and pivoted to an open position.

2. A removable suspension member for a sheave block having a sheave rotatably journaled between a pair of like side frames, there being oppositely positioned ears and one projecting from each side frame, and including:

- (a) an arched shackle extending between and having opposite side sections pivotally fastened to one of the ears and releasably fastened to the other ear,
- (b) an arcuate guide underlying said shackle and carried by one side section thereof to overlie the periphery of the sheave when the shackle is positioned to extend between said ears and for retaining a line at the sheave,

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(c) whereby a support line is received by the shackle independently of the first mentioned line retained in the sheave by said guide,

(d) and a stop to limit pivotal movement of the shackle at said one ear so as to form an arched and open hook thereof when the shackle is released from the said other ear and pivoted to an open position.

3. A removable suspension member for a sheave block having a sheave with a circumferential line accommodating groove there in and with a pair of side flanges extending radially from said groove, said sheave being rotatably journaled between a pair of like side frames, and there being oppositely positioned ears and one projecting from each side frame, and including:

(a) an arched inverted U-shaped shackle extending between and having opposite side sections fastened to the opposite ears respectively, one section being pivotally fastened to one ear and the other section being releasably fastened to the other ear,

(b) an arcuate guide carried at the periphery of the sheave by an arm extending from one of said side sections and having a face opposed to the groove when the shackle is positioned to extend between said ears and to retain a line at the sheave,

(c) whereby a support line is received by the shackle independently of the first mentioned line retained in the sheave by said guide,

(d) and a stop to limit pivotal movement of the shackle at said one ear whereby the said other section is disposed substantially normal to the plane of the sheave so as to form an arched and open hook when the shackle is released and pivoted to an open position.

4. A removable suspension member for a sheave block having a sheave with a circumferential line accommodating groove therein and with a pair of side flanges extending radially from said groove, said sheave being rotatably journaled between a pair of like side frames, and there being oppositely positioned ears and one projecting from each side frame, and including:

(a) an arched inverted U-shaped shackle extending between and having opposite side sections converging to and fastened to the opposite ears respectively, one section being pivotally fastened to one ear and the other section being releasably fastened to the other ear,

(b) an arcuate guide carried at the periphery of the sheave by one of said side sections and having a face extending between the flanges and opposed to the groove when the shackle is positioned to extend between said ears and to retain a line at the sheave,

(c) whereby a support line is received by the shackle independently of the first mentioned line retained in the sheave by said guide,

(d) and a stop to limit pivotal movement of the shackle at said one ear whereby the said other section is disposed substantially normal to the plane of the sheave so as to form an arched and open hook when the shackle is released and pivoted to an open position.

5. A removable suspension member for a sheave block having a sheave rotatably journaled between a pair of like side frames, there being oppositely positioned ears and one projecting from each side frame, and including:

(a) an arched shackle extending between and having opposite side sections pivotally fastened to one of the ears and releasably fastened to the other ear,

(b) and a stop to limit pivotal movement of the shackle at said one ear so as to stop the arched shackle to form an arched and open hook thereof when the shackle is released from the said other ear and pivoted to an open position.

6. A removable suspension member for a sheave block having a sheave with a circumferential line accommodating groove therein and with a pair of side flanges extending radially from said groove, said sheave being rotatably journaled between a pair of like side frames, and there

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being oppositely positioned ears and one projecting from each side frame, and including:

- (a) an arched inverted U-shaped shackle extending between and having opposite side sections fastened to the opposite ears respectively, one section being pivotally fastened to one ear and the other section being releasably fastened to the other ear, 5
 - (b) and a stop to limit pivotal movement of the shackle at said one ear whereby the said other section is stopped so as to be disposed substantially normal to the plane of the sheave and so as to form an arched and open hook when the shackle is released and pivoted to an open position. 10
7. A removable suspension member for a sheave block having a sheave with a circumferential line accommodating groove therein and with a pair of side flanges extending radially from said groove, said sheave being rotatably journaled between a pair of like side frames, and there being oppositely positioned ears and one projecting from each side frame, and including: 15
- (a) an arched inverted U-shaped shackle extending between and having opposite side sections converging to and fastened to the opposite ears respectively, one 20

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section being pivotally fastened to one ear and the other section being releasably fastened to the other ear,

- (b) and a stop to limit pivotal movement of the shackle at said one ear whereby the said other section is stopped so as to be disposed substantially normal to the plane of the sheave and so as to form an arched and open hook when the shackle is released and pivoted to an open position.

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