May 29, 1951 M. W. SCHRADER 2,555,059

SNATCH BLOCK

Filed April 21, 1950

Fig. 1.

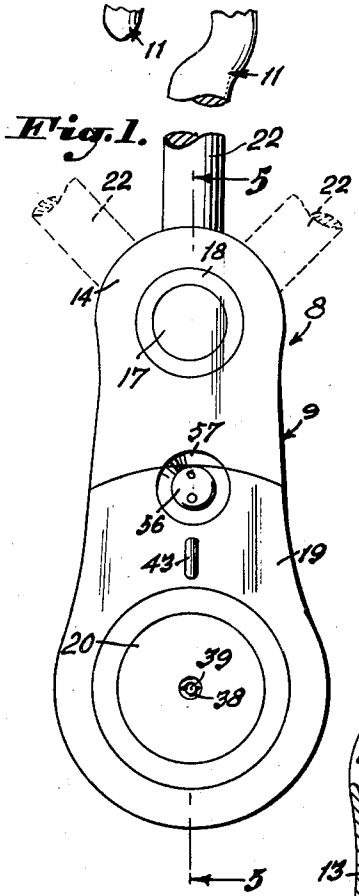


Fig. 2.

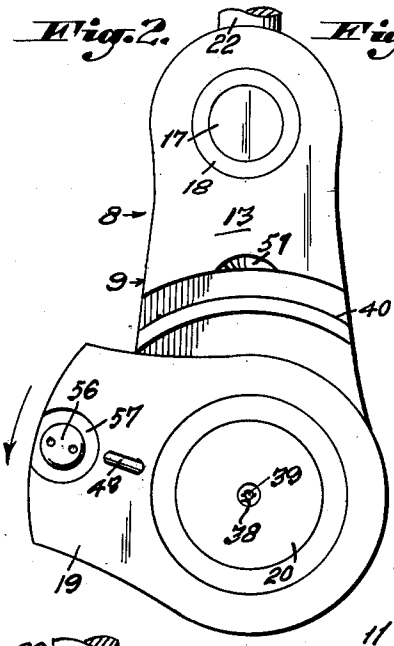


Fig. 3.

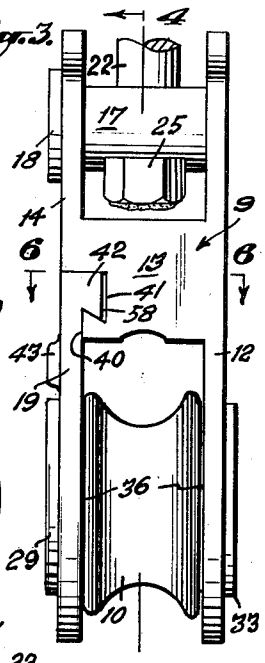


Fig. 4.

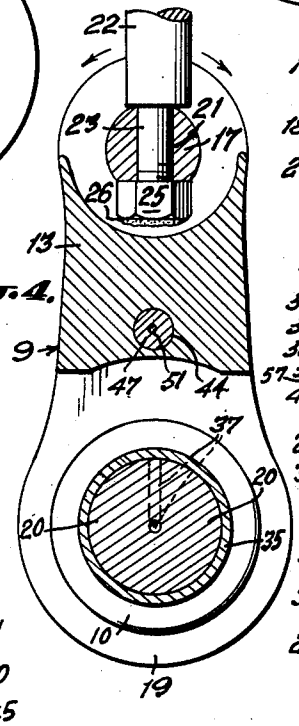


Fig. 5.

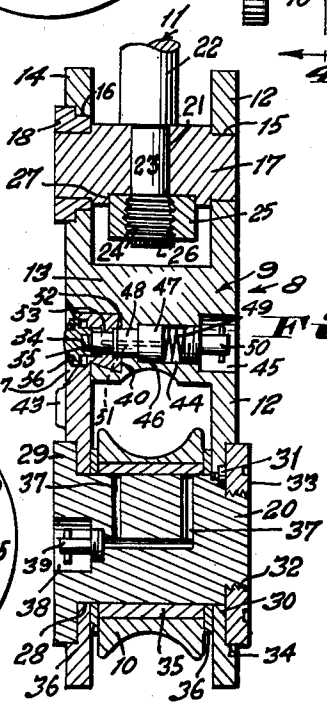
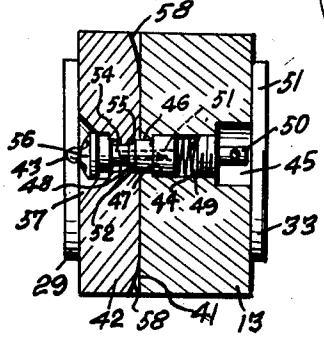


Fig. 6.



Inventor

Martin W. Schrader

By John N. Randolph

Attorney

Patented May 29, 1951

2,555,059

UNITED STATES PATENT OFFICE

2,555,059

SNATCH BLOCK

Martin W. Schrader, Lafayette, La.

Application April 21, 1950, Serial No. 157,321

8 Claims. (Cl. 254—193)

1

This invention relates to a novel construction of pulley block, commonly known as a "snatch block" and which constitutes the device through which a cable is passed in order to lift or move heavy objects and which is extensively used in oil field operations, loading and unloading ships, in logging and mining operations and elsewhere where heavy loads have to be lifted or moved.

More particularly, it is a primary object of the present invention to provide a snatch block having a cable receiving pulley which is mounted in a block having a swingably mounted side capable of being readily swung to a released position to enable an intermediate portion of a cable to be applied to the pulley while the end portions of the cable are fastened, respectively, one to the load to be lifted or moved and the other to a winding drum or other apparatus for exerting a pull on the cable, thereby enabling the intermediate portion of the cable to be attached to or detached from the snatch block without removing any part of the snatch block to expose the cable engaging pulley or without detaching any fastenings connecting the snatch block sections.

Still a further object of the invention is to provide a snatch block having a swingably mounted side provided with novel latch means for normally holding said side latched in a position for closing the sides of the pulley to prevent disengagement of a cable or other flexible element therefrom and which latched side may be readily unlatched and swung to a position for exposing one-half or side of the pulley by the use of one hand thereby leaving the other hand of the operator free to support himself on a derrick or other structure to which the snatch block is suspended.

Still a further object of the invention is to provide a snatch block of extremely simple construction having a single journal for rotatably mounting the pulley and the swingably mounted snatch block side together with a novel latch structure which will automatically resume a latched position when the swingable mounted snatch block side is returned to its normal position for closing the upper half of the pulley or sheave.

Still a further object of the invention is to provide a snatch block which may be readily lubricated and maintained in a proper operating condition without disconnecting or removing any of the parts thereof.

Various other objects and advantages of the invention will hereinafter become more fully apparent from the following description of the

2

drawing, illustrating a preferred embodiment thereof, and wherein:

Figure 1 is a front elevational view showing the snatch block in a closed position;

Figure 2 is a similar view, partly broken away, showing the snatch block in an open position;

Figure 3 is an edge elevational view thereof looking from right to left of Figure 1;

Figure 4 is a vertical sectional view taken substantially along a plane as indicated by the line 4—4 of Figure 3;

Figure 5 is a vertical sectional view taken substantially along a plane as indicated by the line 5—5 of Figure 1, and

Figure 6 is a cross sectional view taken substantially along a plane as indicated by the line 6—6 of Figure 3.

Referring more specifically to the drawing, the snatch block in its entirety is designated generally 8 and includes broadly a block, designated generally 9, a pulley or sheave 10 and a supporting hook 11.

The block 9 includes a stationary side 12 which extends from top to bottom thereof, which has a stationary, preferably integral intermediate portion 13 which extends inwardly from the side 12 and which is provided with an integral upstanding part 14 which is spaced from and corresponds to the upper end of the stationary or rear side 12. The upper end of the side 12 is provided with an opening 15 which aligns with a larger opening 16 in the block portion 14. A journal pin 17 has a restricted end which is journaled in the opening 15 and an opposite restricted end which is journaled in a bearing 18. The bearing 18 is secured by a press fit engagement in the opening 16. The block 9 also includes a separate front side 19 which is spaced from the lower portion of the rear side 12 and which is supported by and swingably mounted on a journal pin 20, which likewise provides the journal for the pulley or sheave 10 and which will hereinafter be described in detail.

The pin 17, which is turnably mounted in the upper end of the block 9 has a bore 21 extending diametrically therethrough. The snatch block supporting hook 11 has a depending shank 22 which is provided with a restricted terminal portion 23 which extends through the bore 21 and has a threaded end 24 which engages a nut 25 to secure the hook 11 to the pin 17. The nut 25 is secured against removal from the threaded stem portion 24 as by welding, as seen at 26. A portion of the nut 25 may seat in a recess 27 of the pin 17 to prevent the hook 11 from turn-

ing relatively to the block 9 on its longitudinal axis. However, said hook 11 is free to swing relatively to the block 9 when the pin 17 oscillates in its journals 15 and 18, between and beyond the dotted line positions of the hook shank 22 as illustrated in Figure 1.

The front side 19 of the block 9 is provided with an opening 28 which turnably engages a part of the pin 20 and which is enlarged at the outer face of the side 19 to receive a portion 29 of the pin 20 by which the side 19 is retained on said pin. The pin 20 extends through an opening 30 in the lower part of the rear side 12 and a portion of said pin and the side 30 are recessed and threaded to receive a headed screw 31 by which the journal pin 20 is keyed to the rear wall 12. The terminal of the last mentioned end of the pin 20 is reduced in diameter and threaded as seen at 32 to receive a lock nut 33 which seats in a recess 34 of the outer face of the side 12. A bronze bushing 35 is disposed on the pin 20 and engages the bore of the pulley 10 so that said pulley or sheave is journaled directly on the bushing 35 for rotation between the block sides 12 and 19. A washer 36 is disposed between each side of the pulley 10 and the snatch block sides 12 and 19. The pin 20 is provided with lubricating passages 37 which open into the bushing 35 and into a recess 38 in the head of the pin 20 and which accommodates the head of a lubricating connection 39 which extends into the passage 37 by which grease or other lubricant can be forced into the passage 37 and held against drainage back into the recess 38 by the fitting 39, which is of a conventional construction.

The intermediate block portion 13 is recessed on its front side as seen at 40 to accommodate the upper end of the swingably mounted front side 19 and is provided with an arcuate groove 41 which opens into the recess 40 and which extends from end-to-end of the part 13 and has an undercut or modified dovetail bottom portion. The free end of the side 19 has an inwardly extending hook-shaped extension 42 which is arcuately curved to conform to the groove 41 and shaped to fit snugly therein, as best illustrated in Figures 3 and 5, so that the front side 19 may be swung on the pin 20 in either direction from its closed position of Figure 1 to disengage its free end from the block portion 13 to thereby expose the upper part of the pulley 10 at the front side of the block 9, said front side 19 being capable of swinging through an arc of 360° on the pin 20. The side 19 is provided with a longitudinally extending enlargement 43 adjacent its free end forming a finger rest by which said side may be swung toward or away from a closed position.

The intermediate block portion 13 is provided with a bore 44 having an enlarged end 45 which opens outwardly from the rear face of the block 9 and a restricted opposite end 46 which opens into the groove 41. A plunger 47 is reciprocally mounted in the bore 44 and has a restricted extension 48 which slidably and non-rotatably engages the restricted bore portion 46 and which is urged into the recess 41 by a spring 49 disposed in the bore 44 between the plunger 47 and a lubricating fitting 50 which threadedly engages the bore 44 and extends into its enlargement 45. The plunger 47 is provided with a lubricating passage 51 which extends from end-to-end therethrough and by which a lubricant admitted to the bore 44 through the fitting 50 may pass into the groove 41.

The upper, free end portion of the front side 19 has a bore extending therethrough and through its extension 42 and which includes an enlarged inner end 52 to receive the plunger end 48 which projects into the recess 40 for latching the swinging side 19 in its closed position of Figures 1, 3 and 5. Said bore includes a restricted intermediate portion 53 for slidably receiving the shank of a screw 54 having a head, a part of which is disposed in the recess 52, as seen at 55. A knob 56 threadedly engages the opposite, outer restricted end of the screw 54 and is disposed in a flared outer end 57 of the bore 53 which, as seen in Figure 2 is formed partly in the front face of the intermediate portion 13 and which is substantially larger than the knob 56. The ends of the face of the extension 42 are beveled on the side thereof which faces the inner wall of the arcuate groove 41, as best seen in Figures 3 and 6, at 58 for a purpose which will hereinafter become apparent. The knob or button 56 may be displaced inwardly of the enlarged outer end portion 57 of the bore and which includes stepped portions extending inwardly to the restricted bore portion 53, to accommodate inward movement of said button 56 sufficiently to displace the screw head 55 to the inner face of the extension 42 so that the head 55 will function to displace the plunger portion 48 out of engagement with the recess 52 when the button 56 is displaced inwardly to thereby unlatch the block side 19 from the latch plunger 47, 48. The enlarged flared outer portion 57 affords ample space around the button or knob 56 so that a worker wearing gloves may readily displace the button or head 56 inwardly, as just previously described, with a gloved finger to thus unlatch the side 19 which is free to swing in either direction on the pin 20 when its recess 52 is thus disengaged from the plunger end 48.

The front side 19 may be swung either clockwise or counterclockwise from its closed position of Figure 1 to an open position, as illustrated in Figure 2, so that an intermediate portion of a cable, not shown, may be inserted into the block 9 to engage the pulley 10. The side 19 may then be returned to a closed position and latched by the plunger end 48 engaging the recess 52. As the free end of the side 19 is swung upwardly in either direction toward its position of Figure 1 one end of its extension 42 will initially engage the arcuate groove 41 and as said end approaches a mid-way point of the groove 41 its beveled surface 58 will engage the end 48 of the plunger 47 which is held projected into the groove 41 by the spring 49 and will function as a cam surface for retracting the plunger 47, 48, against the spring 49 from left to right of Figure 5 until the recess 52 aligns with the bore portion 46. When the parts reach this point, the spring 49 will project the plunger 47 from right to left of Figures 5 and 6 so that the plunger end 48 will engage the head 55 of the screw 54 to displace said screw from right to left and to project the button 56 outwardly of the depression 57, so that the outer end of the plunger portion 48 may seat in the recess 52 to latch the block side 19 to the stationary intermediate portion 13. The thumb or finger rest 43 may be utilized for swinging the side 19 to an open position after the plunger 47, 48 has been retracted, as previously described.

It will thus be seen that the snatch block 8 provides a structure which may be readily opened for applying an intermediate portion of a cable or other flexible element to its pulley or for removing it therefrom and may be readily latched in a closed position to prevent accidental disen-

gagement of the cable or flexible element from the pulley. Likewise, the latch structure may be easily released with one finger and another finger of the same hand used to swing the pivoted side of the snatch block to an open position or for returning it to a closed and latched position.

The outer ends of the grease fittings 39 and 59 correspond so that the same grease gun may be utilized for lubricating the bushing 35 and the latch structure in which the lubricating passage 51 is provided.

Various modifications and changes are contemplated and may obviously be resorted to, without departing from the spirit or scope of the invention as hereinafter defined by the appended claims.

I claim as my invention:

1. A snatch block comprising a block structure having a recessed upper end and a recessed lower end, a journal pin extending through and detachably secured to the recessed lower end of the block structure, a pulley rotatably mounted on the journal pin in the lower recessed end of the block, a pin extending through and journaled in the upper recessed end of the block, a snatch block supporting hook having a shank end secured to the last mentioned pin and swingably supported thereby for swinging movement relatively to the block and pulley, said block having a separate portion defining one side of its lower recessed end, said side constituting a plate swingably mounted on the journal pin of the pulley adjacent one end thereof for exposing the upper part of the pulley in one position of said plate and for closing said side of the upper portion of the pulley in another position of the plate, said block including an intermediate portion having a front face recessed to accommodate the free end of the plate when in said last mentioned position, the free end of said plate being provided on its inner side with an extension of a modified dovetail cross section which is arcuately bowed from end-to-end thereof, said intermediate block portion having a groove opening into the recessed front face in which said plate extension is slidably received and snugly engaged when the plate is swung upwardly for closing the pulley side, and latch means mounted in said intermediate block portion and releasably latching the plate with its free end in engagement with the intermediate block portion.

2. A snatch block as in claim 1, and means for detachably securing and keying the pulley journal pin to the other, stationary side of the pulley block.

3. A snatch block as in claim 1, a bushing mounted on the journal pin between said pin and the pulley, washers mounted on said pin between the sides of the pulley and the sides of the block structure, and means for lubricating said bushing, pin and pulley through one end of said journal pin.

4. A snatch block as in claim 1, said latch means comprising a spring pressed plunger having a portion which is normally spring biased into the arcuate groove of the intermediate block portion which receives the plate extension, and said plate extension having a recess intermediate of its ends for receiving said plunger end to releasably latch the free end of the plate in engagement with the intermediate block portion.

5. A snatch block as in claim 1, said latch means comprising a spring pressed plunger having a portion which is normally spring biased into the arcuate groove of the intermediate block

portion which receives the plate extension, and said plate extension having a recess intermediate of its ends for receiving said plunger end to releasably latch the free end of the plate in engagement with the intermediate block portion, a latch operator reciprocally mounted in the plate and plate extension, the spring pressed plunger urging the latch operator to a retracted position when the recess of the plate extension is disposed to receive the plunger, said latch operator having an exposed end forming a button located at the front face of the plate and adapted to be manually engaged for displacing the latch operator inwardly to retract the latch plunger out of engagement with the recess of the plate extension.

6. A snatch block as in claim 1, said latch means comprising a spring pressed plunger having a portion which is normally spring biased into the arcuate groove of the intermediate block portion which receives the plate extension, said plate extension having a recess intermediate of its ends for receiving said plunger end to releasably latch the free end of the plate in engagement with the intermediate block portion, and means for lubricating the latch plunger and plate extension through the intermediate block portion and through said latch plunger.

7. A snatch block as in claim 1, said latch means comprising a spring pressed plunger having a portion which is normally spring biased into the arcuate groove of the intermediate block portion which receives the plate extension, and said plate extension having a recess intermediate of its ends for receiving said plunger end to releasably latch the free end of the plate in engagement with the intermediate block portion, a latch operator reciprocally mounted in the plate and plate extension, the spring pressed plunger urging the latch operator to a retracted position when the recess of the plate extension is disposed to receive the plunger, said latch operator having an exposed end forming a button located at the front face of the plate and adapted to be manually engaged for displacing the latch operator inwardly to retract the latch plunger out of engagement with the recess of the plate extension, said plate recess being flared at the outer surface of the plate and around the button.

8. A snatch block as in claim 1, said latch means comprising a spring pressed plunger having a portion which is normally spring biased into the arcuate groove of the intermediate block portion which receives the plate extension, and said plate extension having a recess intermediate of its ends for receiving said plunger end to releasably latch the free end of the plate in engagement with the intermediate block portion, a latch operator reciprocally mounted in the plate and plate extension, the spring pressed plunger urging the latch operator to a retracted position when the recess of the plate extension is disposed to receive the plunger, said latch operator having an exposed end forming a button located at the front face of the plate and adapted to be manually engaged for displacing the latch operator inwardly to retract the latch plunger out of engagement with the recess of the plate extension, said latch operator being formed of detachably connected end sections one of which comprises the button, said sections being removably applied to the plate recess from opposite sides of the plate.

MARTIN W. SCHRADER.

No references cited.