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2,728,552

TRAVELING BLOCK GUARD AND LOCK

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2 Sheets-Sheet 1

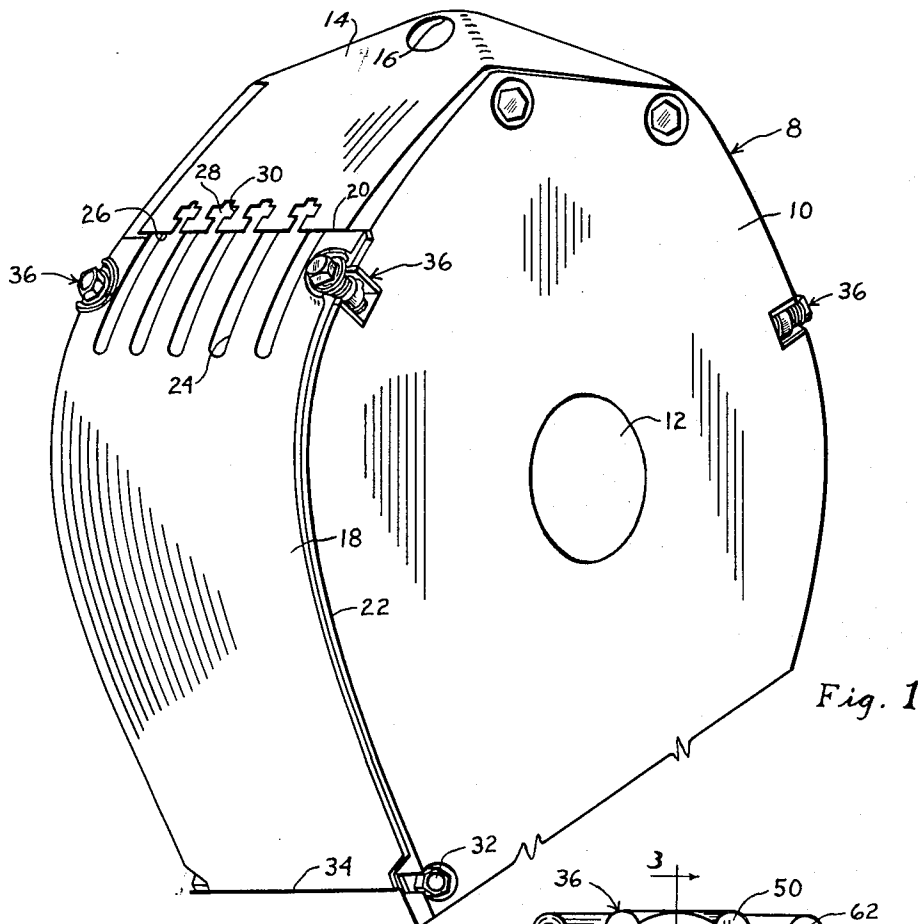
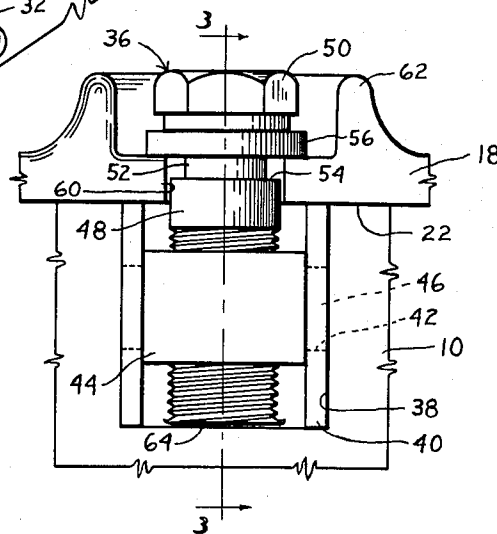


Fig. 1

Fig. 2



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2 Sheets-Sheet 2

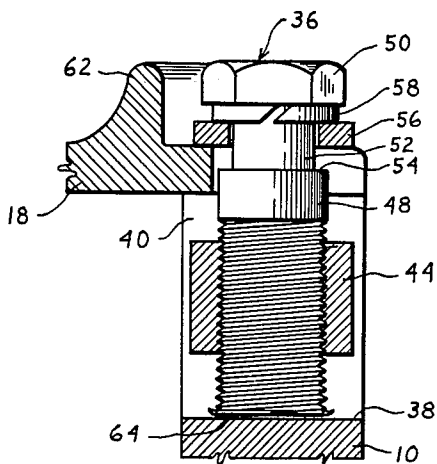


Fig. 3

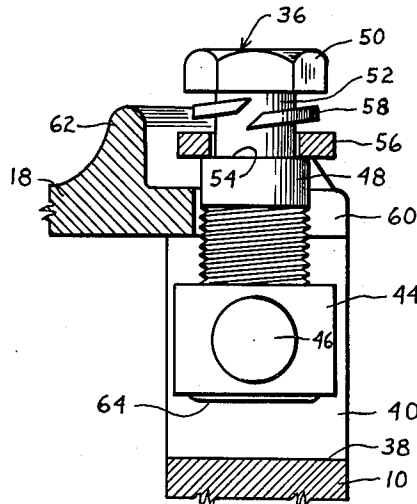


Fig. 4

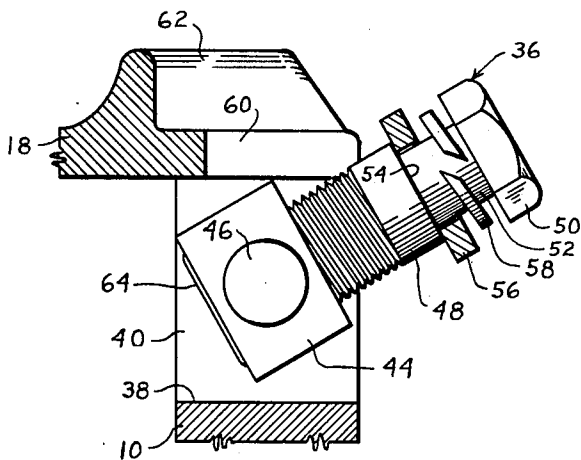


Fig. 5

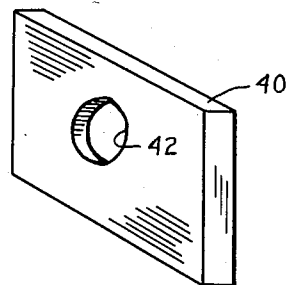


Fig. 6

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TRAVELING BLOCK GUARD AND LOCK

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3 Claims. (Cl. 254—197)

This invention relates to improvements in traveling blocks and more particularly, to improved guards and guard locking mechanisms for traveling blocks.

As it is well known in the oil industry, the traveling blocks used on oil wells for the drilling and production thereof frequently weigh as much as four or five tons. The traveling blocks usually consist, in the main, of stationary side members having a plurality of sheaves rotatably supported therebetween and with a guard covering the upper portion of the sheaves and secured to the side members. Also, it is common practice to have guard members removably secured to the edges of the side members to cover the remaining exposed portions of the sheaves. These last mentioned guards must be removed periodically for such things as cleaning the traveling block and threading the sheaves with a different size of cable. It will be apparent that the size and weight of these removable guards will be enormous for manual handling.

Heretofore it has been the practice to secure the removable guards by the use of bolts. The bolts are ordinarily threaded directly into the side members and must be completely removed to permit removal of the guard plates. In many instances, the guards must be completely removed to gain access to the sheaves. This operation now entails the use of excessive manpower for handling the guards and frequent loss of the bolts utilized to secure the guards to the side members. Both the cumbersome characteristics of the guards and the inherent inaccessibility of traveling blocks contribute to the loss of the bolts. And, as a matter of common knowledge, spare bolts are usually not available around an oil well or drilling rig.

The present invention contemplates novel removable guards and guard locking mechanisms for traveling blocks whereby the blocks may be threaded and cleaned with a minimum of manpower and loss of time. I contemplate pivotally securing the guards to the side members at the lower ends of the guards. Thus, the guards may be retained on the traveling blocks, yet be handled manually with the minimum of effort. I also contemplate securing the guard plates to the side members near the upper ends of the guards with a unique locking mechanism. The locking mechanism is simple in operation, will not become inadvertently disengaged, and parts will not be lost.

An important object of this invention is to facilitate the cleaning and threading of traveling blocks, particularly the larger traveling blocks.

Another object of this invention is to decrease the manpower required to clean or thread a traveling block.

Another object of this invention is to decrease the total time involved for preparing a traveling block for cleaning or threading and re-assembling the block subsequent to the cleaning or threading.

A further object of this invention is to provide a novel locking mechanism for traveling block guards which will

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not be accidentally disengaged and no parts of which will be lost when the mechanism is disengaged.

A still further object of this invention is to provide a simple operating guard and guard locking mechanism for traveling blocks, both of which may be economically manufactured and utilized on existing traveling blocks with a minimum of alterations.

Other objects and advantages of the invention will be evident from the following detailed description, read in conjunction with the accompanying drawings, which illustrate my invention.

In the drawings:

Figure 1 is a perspective view of a traveling block utilizing my novel guard plate and locking device.

Figure 2 is a side elevational view of a locking device.

Figure 3 is a sectional view taken along lines 3—3 of Fig. 2.

Figure 4 is a view similar to Fig. 3 with the locking device in a retracted position.

Figure 5 is another view similar to Fig. 3 with the locking device retracted and in a disengaged position.

Figure 6 is a perspective view of one of the support pads utilized in the locking mechanism.

Referring to the drawings in detail, and particularly Fig. 1, reference character 8 generally indicates a multiple sheave traveling block. The traveling block 8 is of the usual type with two spaced side members 10 (only one of which is shown) having a shaft 12 extending there-through for supporting a plurality of sheaves (not shown) between the side members. An arcuately shaped guard member 14 is secured to the side members 10 over the upper portion of the sheaves in the usual manner. An aperture 16 is provided in the central portion of the guard member 14 to receive any suitable connecting member (not shown) for raising and lowering the traveling block 8.

A novel guard plate 18 extends downwardly from each of the opposed lower edges 20 of the upper guard member 14 to cover the major portion of the sheaves. Each guard plate 18 is curved lengthwise to conform to the contour of the outer edges 22 of the side members 10. A vertical slot 24 is provided in the upper portion of each guard plate 18 opposite each of the sheaves to receive the cables (not shown) which extend outwardly from the sheaves. Each slot 24 communicates with the upper edge 26 of the respective guard plate 18 for purposes as will be hereinafter set forth.

A plurality of substantially T-shaped connectors 28 extend upwardly from the upper edge 26 of each guard plate 18. The connectors 28 fit into correspondingly shaped slots 30 provided in the lower portions of the upper guard member 14 and communicating with the respective lower edges 20 thereof. The connectors 28 and slots 30 assist in the alignment and support of the guard plates 18 when they are in operating position as will be more fully hereinafter set forth.

A suitable, sturdy, hinge connection 32 is provided between the lower edge 34 of each guard plate 18 and the side members 10. The hinges 32 may be constructed in any suitable manner so as to permit an outward and downward swinging movement of the guard plates 18.

Novel locking devices, generally indicated at 36, are provided in the side members 10 for securing the guard plates 18 thereto when the guard plates 18 are in operating position as shown in Fig. 1. A substantially square slot 38 (Figs. 2—5) is formed in the outer edge 22 of each side member 10 adjacent the upper end 26 of each guard plate 18 to receive the locking devices 36.

Each locking device 36 comprises a pair of support pads 40 (shown in detail in Fig. 6) welded, or otherwise rigidly secured, to the opposite sides of each slot 38. The sup-

port pads 40 extend transversely to the side members 10 and guard plates 18, and each pair of pads 40 have aligned apertures 42 therein. A cylindrically shaped and internally threaded support member 44 is rotatably supported between each pair of pads 40 by a pair of diametrically opposed pins 46. The pins 46 extend into the respective apertures 42 and make a sliding fit therein. Thus, the support members 44 may be pivoted in a direction transverse to the guard plates 18.

A threaded bolt 48, having an enlarged head 50 on the outer end thereof, is threaded through each support member 44. A portion 52 of the bolt 48 adjacent the head 50 is of reduced diameter; thus providing a circumferential shoulder 54 on the bolt 48 in spaced relation to the head 50. A flat, annular shaped washer 56 is slidably disposed on the reduced portion 52. The inner diameter of the washer 56 (see Fig. 3) is less than the diameter of the major portion of the bolt 48. Therefore, the washer 56 will be retained between the head 50 and shoulder 54. The outer diameter of the washer 56 is greater than the outer diameter of the bolt 48 for purposes as will be hereinafter set forth. A spring washer 58 is also disposed on the reduced portion 52 of the bolt 48 and is retained between the head 50 and washer 56.

A transverse slot 60 is provided in each edge of each guard plate 18 in alignment with each of the bolts 48. Each slot 60 is of a size to permit free movement of the respective bolt 48 therethrough, but is of less width than the outer diameter of the respective washer 56. An outwardly extending flange or boss 62 is provided on each guard plate 18 around each slot 60 to protect the bolt heads 50 from external blows when in the positions shown in Figs. 1 and 2.

Operation

During the normal operation of the traveling block 8, the guard plates 18 are in a closed position as shown in Fig. 1. Also, cables (not shown) extend through the slots 24 of one guard plate 18, around the sheaves and then out through the slots 24 of the opposite guard plate 18.

When it is desired to change the cables and/or clean the inside of the traveling block 8, the block is moved to such a position that personnel have access to the guard plates 18. The locking devices 36 are then disengaged by partially unthreading the bolts 48 from the support member 44 and then swinging the bolts 48 outwardly on the pins 46 through the respective slots 60.

As the bolts 48 are unthreaded, the heads 50 thereof relieve the pressure exerted on the spring washers 58 and flat washers 56. It will be noted that the lower end 64 of each bolt 48 is deformed to prevent complete retrograde movement of the bolts through the support members 44. Slightly before the bolts 48 are unthreaded the maximum limit, the shoulder 54 of each bolt engages the lower face of the respective washer 56; and upon continued unthreading, lifts both the washer 56 and spring washer 58 (as shown in Fig. 4) clear of the respective guard plate 18. The bolts 48 may then be swung outwardly to the position illustrated in Fig. 5; whereupon the guard plates 18 are swung outwardly and downwardly on the hinges 32.

The connectors 28 are disengaged from the slots 30 by moving almost directly outward during the initial outward movement of the guard plates 18. It will also be noted that the slots 24 are open at their upper ends. Therefore, an outward and downward movement of the plates 18 will not interfere with the position of the cables extending into the traveling block 8. The slots 24 will, in effect, moved downwardly over the cables and the cables will not interfere with a complete opening of the plates 18. When the plates 18 are swung all the way down, they will hang by the hinges 32 and permit ready access to the inside of the traveling block 8.

When the inside of the traveling block 8 has been cleaned and repaired, the guard plates 18 are swung outwardly and upwardly to the position shown in Fig. 1.

As the plates 18 approach their closed positions, the slots 24 receive the cables to permit movement of the plates 18 thereover. During the final closing movement of the plates 18, the connectors 28 are inserted in the slots 30 to assure correct transverse alignment of the plates. The locking devices 36 are then engaged with the plates 18 to retain the plates 18 in a closed position for further operation of the traveling block 8.

To engage the locking devices 36, the bolts 48 are swung inwardly from the position shown in Fig. 5 into the respective slots 60 as shown in Fig. 4. It will be noted that the shoulders 54 retain the washers 56 and 58 in such a position they will not interfere with the swinging movement of the bolts 48. When the bolts 48 reach the position illustrated in Fig. 4, they are threaded into the respective support members 44. As the shoulders 54 move into the respective slots 60, the flat washers 56 contact the outer surface of the respective guard plates 18 around the slots 60. Continued threading of the bolts 48 brings the heads 50 into contact with the respective spring washers 58 to compress these washers and exert pressure on the washers 56. When the bolts 48 are snugly secured in the support members 44, as shown in Figs. 2 and 3, the spring washers 58 are compressed and the washers 56 are in rigid contact with the guard plates 18 to prevent an outward opening movement of the guard plates 18. In addition, the length of each bolt 48 is such that when the bolts 48 are in a locked position, the lower ends 64 thereof are in close proximity with the lower end of the respective slots 38. Thus, if the bolts 48 are inadvertently jarred, the lower ends 64 will contact the ends of the slots 38 to preclude an outward swinging movement of the bolts 48 and a consequent disengagement of the locking device 36. Also, the flanges 62 provide protection for the bolt heads 50 to increase the safety feature.

From the foregoing, it is apparent that the present invention provides novel removable plates and locking devices for a traveling block whereby the blocks may be threaded and cleaned with a minimum manpower and loss of time. The guard plates are pivotally secured at their lower ends to facilitate the handling thereof and the guard plates are locked at their upper ends with a unique locking device in such a manner as to require the minimum in time and effort for not only locking and unlocking the guard plates, but retaining them in the desired positions for such operations as well. The locking devices are simple in operation and require a minimum of tools for working them. In addition, the locking devices will not become lost, particularly when disengaged, and the maximum protection is afforded against inadvertent unlocking thereof.

Changes may be made in the combination and arrangement of parts as heretofore set forth in the specification and shown in the drawings, it being understood that any modification in the precise embodiment of the invention may be made within the scope of the following claims without departing from the spirit of the invention.

I claim:

1. A locking means for a traveling block having spaced side members with a plurality of sheaves rotatably supported therebetween and having pivotable guard plates covering the sheaves and extending adjacent the edges of said side members, said locking means securing the guard plates to the side members comprising a recess provided in the side members, a pair of apertured plates rigidly secured in spaced relation in said recess, said apertures in said plates being in alignment, an internally threaded member having oppositely opposed pins rotatably disposed in the aligned apertures of the plates to provide pivotable movement of the threaded member, a threaded stud engaged in the threaded member and adapted to be pivotable therewith, said guard plates having a slot continuous with one edge thereof for receiving the stud in an upstanding position thereof, and means on the stud

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cooperating with the guard plate for maintaining the guard plate in locked position against the side plates.

2. A locking means for a traveling block having spaced side members and cooperating guard plates pivotally positioned adjacent the edges of said side members, said locking means securing the guard plates to the side members, said locking means comprising a recess provided in each side member adjacent each edge of the guard plates, a pair of plates having aligned apertures secured at opposite sides of each of said recesses, a female threaded member having oppositely opposed studs rotatably disposed in the aligned apertures of the plates providing pivotable movement for the female member, a bolt threadedly engaged in the female member and pivotable therewith, said guard plates having a slot conterminous with one edge thereof for receiving the bolt in an upstanding position, longitudinally spaced circumferential shoulders on the outer periphery of the bolt, and a washer slidably disposed on the bolt between the said shoulders and having an outer diameter greater than the diameter of the slot, said washer cooperating with the guard plate for maintaining the guard plate in locked position against the side plate upon threading the bolt into the female member.

3. A locking means for a traveling block having spaced side members and cooperating guard plates pivotally positioned adjacent the edges of said side members, said

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locking means securing the guard plates to the side members, said locking means comprising a recess provided in each side member adjacent each edge of the guard plates, a pair of plates having aligned apertures secured at opposite sides of each of said recesses, a female threaded member having oppositely opposed studs rotatably disposed in the aligned apertures of the plates providing pivotable movement for the female member, a bolt threadedly engaged in the female member and pivotable therewith, said guard plates having a slot conterminous with one edge thereof for receiving the bolt in an upstanding position, longitudinally spaced circumferential shoulders on the outer periphery of the bolt, and a washer slidably disposed on the bolt between the said shoulders and having an outer diameter greater than the diameter of the slot, said washer cooperating with the guard plate for maintaining the guard plate in locked position against the side plate upon threading the bolt into the female member, and means to prevent complete removal of the bolt from the female member during a loosening thereof from the guard plate.

References Cited in the file of this patent

UNITED STATES PATENTS

2,121,256	Minor	June 21, 1938
2,523,760	Hayner	Sept. 26, 1950
2,601,232	Sohn et al.	June 24, 1952