May 6, 1924. 1,492,793

A. E. HANSEN

LOGGING BLOCK

Filed April 18, 1922

Fig. 1

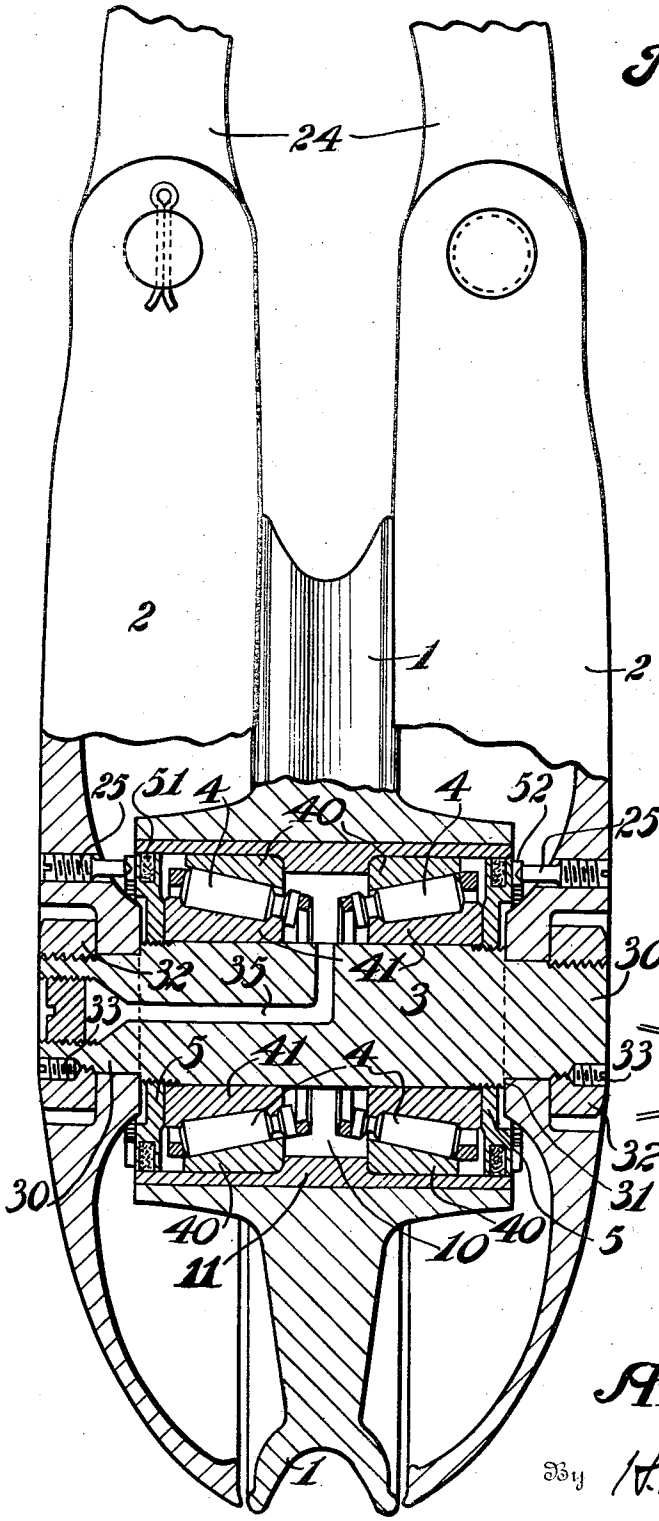


Fig. 2

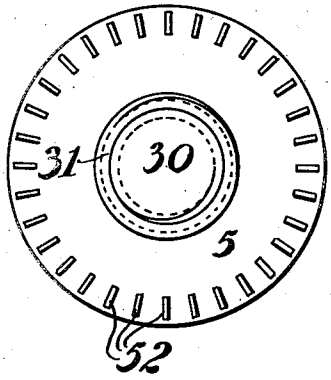
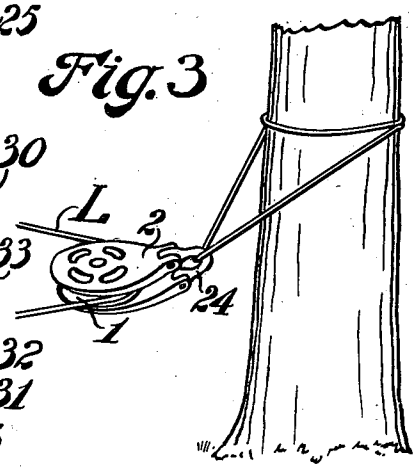


Fig. 3



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UNITED STATES PATENT OFFICE.

ARTHUR E. HANSEN, OF SEATTLE, WASHINGTON, ASSIGNOR TO YOUNG IRON WORKS, INC., OF SEATTLE, WASHINGTON, A CORPORATION OF WASHINGTON.

LOGGING BLOCK.

Application filed April 18, 1922. Serial No. 554,910.

To all whom it may concern:

Be it known that I, ARTHUR E. HANSEN, a citizen of the United States of America, and resident of the city of Seattle, in the county of King and State of Washington, have invented certain new and useful Improvements in Logging Blocks, of which the following is a specification.

My invention is applicable to logging blocks of all characters, and also to blocks for other uses. It is particularly adapted, however, to blocks which in ordinary use lie in a plane other than the vertical plane, or in which the lateral pull of the line tends to move the sheave axially or to twist it from its usual plane of rotation.

In such blocks of the ordinary construction, the sheave rests against the cheek plate on the lower side and in a relatively short time wears through the cheek plate. Further, in use such contact generates considerable friction.

It is an important object of my invention to provide a block in which the sheave is held rigidly in its plane of rotation, spaced from the cheek plates by at least a small amount, in this manner to avoid wearing upon the cheek plates and the consequent friction.

Other objects are to provide a block in which the sheave may be provided with lateral thrust bearings and antifriction bearings; and to provide a block in which lubrication is rendered simple and the necessity for frequent replenishment of the lubricant is avoided.

Still other objects may be ascertained from a study of the following specification and claims and of the drawings annexed hereto.

My invention comprises those novel parts and combinations thereof which are shown in the accompanying drawings, described in the specification, and particularly defined by the claims terminating the same.

In the accompanying drawings I have shown my invention in the form which is now preferred by me.

Figure 1 is a partial elevation and partial axial section of a block embodying my invention.

Figure 2 is an end elevation of a detail of the block.

Figure 3 is a perspective illustrating a block in use and the position it occupies.

In Figure 3 I have shown a block which is secured to an anchor tree and through which a line L is passed, the line lying in a substantially horizontal plane. Thus ordinarily, and always while any strain is placed upon the line L, the block will lie upon its side. If the sheave is merely rotatable upon a fixed pivot pin, or if the sheave and the attached pivot pin are merely loosely held and rotatable in the cheek plates, the sheave is certain to lie against the cheek plates and thus to wear them out.

Between the cheek plates 2 of my block I position a sheave 1. The sheave, however, is spaced sufficiently from the cheek plates that it does not touch them at any point. A pivot pin 3 extends between the cheek plates, this preferably having reduced end portions 30 forming outwardly facing shoulders 31 against which the cheek plates abut. Nuts 32 may be secured on the reduced end portions 30 to secure the pin 3 non-rotatively in the cheek plates 2. I have shown set screws 33 to lock the nuts 32 in place.

The sheave 1 is provided with an axial chamber 10 in which the bearing members are mounted. I prefer to use a bushing 11 which is shrunk into place within the axial bore of the sheave, this being of softer material than the sheave. One race 40 of a tapered roller bearing is secured to the bushing 11 adjacent each end of the axial chamber 10. Races 41, complemental to each of the races 40, are secured upon the pin 3. Tapered rollers 4, which are inclined inwardly, are interposed between the races 40 and 41. The races 41 are adjustable axially of the pin 3, and in order to maintain them in their adjusted position I provide collars or cap plates 5 which are secured upon the pin 3 and adjustable axially thereof, as by threading. The outer ends of the races 41 abut against the adjacent plates 5.

The plate 5 may be provided with a peripheral ring 51 of packing material, these rings 51 contacting with the inner surface of the bushing 11 adjacent its ends and completing the enclosure of the chamber 10. This may then be packed with lubricant, a bore 35 being provided for this purpose in the pin 3. The collars or cap plates 5 are also provided with means for locking them in adjusted position. As shown these comprise a plurality of lugs 52 which are angularly spaced about the collars, these being

engageable by set screws 25 secured in the cheek plates 2 and projecting inwardly to contact with the lugs 52.

It will be noted that the sheave 1 does not at any point touch the cheek plates 2. The sheave is rotatable upon the antifriction rollers 4 and these, being tapered, serve also as lateral thrust bearings. All of the lateral thrust of the sheave 1 when lying upon its side, is transmitted to the rollers 4 and thence to the race 41 which is secured upon the pin 3. There is, of course, no rotative action between the race 41 and the collar 5 which maintains it in adjusted position. The collars 5 are held against rotation but only contact with the sheave 1 through the medium of the packing rings 51.

When it is desired to take up wear in the bearings or to adjust them for any reason, the shackle 24 connecting the upper ends of the cheek plates is disconnected the set screw 25 is removed and one cheek plate is rotated relative to the other and to the sheave 1. A rod is then inserted through the opening which ordinarily receives the set screw 25 and is engaged with a lug 52 other than that formerly engaged by the set screw 25. By then bringing the cheek plate 22 to its normal position the collar 5 is turned up on the pin 3 and forces the race 41 inward. The set screw 25 may then be replaced to engage a lug 52 and to retain the collar 5 in its new position.

What I claim as my invention is:

1. A logging block comprising a sheave, a frame having its opposite side members made as separate parts, and closely surrounding all parts of the sheave, a shaft extending axially through the sheave and fixed to said frame sides to maintain them in definitely spaced relation, and a tapered roller bearing interposed between the shaft and the sheave and having both radial and lateral bearing action on the sheave whereby the sheave is held out of side engagement with the block sides whatever the position of the block.

2. A logging block comprising a sheave, a frame having its opposite sides as separate members which together closely embrace all parts of the sheave without touching it, a shaft connecting the sides and passing through the sheave, said shaft having shoulders engaging the inner faces of the frame sides, the frame sides having exterior nut-seating recesses surrounding the shaft-receiving opening, a clamping nut screwing upon each end of the shaft and seated in said recesses, and a roller bearing between the sheave and the shaft and having both radial and lateral bearing action to hold the sheave out of contact with the frame sides whatever the position of the block.

3. In a pulley block, in combination, a sheave having an axial chamber, cheek plates at each side of the sheave, a pin passing through the axis of said sheave and secured in the cheek plates, a pair of cap plates adjustably secured upon said pin within the cheek plates to close the axial chamber of the sheave, and combined radial and lateral thrust bearings between the sheave and pin enclosed within the axial chamber of the sheave.

4. In a pulley block, in combination, a sheave having an axial chamber, cheek plates at each side of the sheave, a pin passing through the axis of the sheave and shouldered at each end, the reduced end portions being threaded and receivable each in a cheek plate, a nut threading upon each end of said pin secure the cheek plates against the shoulders thereof, one race of a tapered roller bearing being secured within each end of the axial chamber of the sheave, the complemental race of each bearing being secured upon the pin, tapered rollers inclined inwardly interposed between each pair of races, a pair of cap plates threaded upon opposite ends of the pin between the cheek plates, and each engageable with the adjacent bearing race upon the pin to adjust it, said cap plates closing the ends of the sheave's axial chamber, and means for maintaining said cap plates in adjusted position.

5. In a pulley block, in combination, a pair of spaced cheek plates, a shaft connecting and spacing said plates, a sheave rotatable upon said shaft between the cheek plates, cooperating bearing members carried by the sheave and shaft, a disengageable member spacing and connecting the cheek plates outwardly of the shaft, and means whereby said bearing members may be adjusted upon disengaging said spacing member and rotating a cheek plate relative to the shaft.

6. A logging block comprising a sheave having an axially extending chamber, opposite outwardly directed shoulders within said chamber, a pair of cheek plates disposed at opposite sides of the sheave, a shaft extending through said chamber and secured in the two cheek plates, an outwardly directed annular bearing race abutting against each of said shoulders, an inwardly-directed bearing race complemental to each of said first races and axially adjustable upon said shaft, means for adjusting said second races, and antifriction bearing members interposed between said pairs of complemental races, said races and antifriction members being disposed for both radial and lateral bearing action of the sheave.

7. A logging block comprising a sheave having an axially extending chamber, a bushing secured in said chamber and having opposite outwardly directed shoulders on its inner periphery, a pair of cheek plates disposed at opposite sides of the sheave and closely

embracing but not touching said sheave, a shaft extending through said bushing and secured in the two cheek plates, an outwardly directed annular bearing race abutting against each of said shoulders, an inwardly-directed bearing race complemental to each of said first races and axially adjustable upon said shaft, means for adjusting said second races, and antifriction bearing members interposed between said pairs of complemental races, said races and antifriction members being disposed for both radial and lateral bearing action of the sheave.

8. A logging block comprising a sheave having an axially extending chamber, opposite outwardly directed shoulders within said chamber, a pair of cheek plates disposed at opposite sides of the sheave, a shaft extending through said chamber and secured in the two cheek plates, an outwardly directed annular bearing race abutting against each of said shoulders, an inwardly-directed bearing race complemental to each of said first races and axially adjustable upon said shaft, means for adjusting said second races, and antifriction bearing members interposed between said pairs of complemental races, said races and antifriction members being disposed for both radial and lateral bearing action of the sheave, and a cap plate secured upon the shaft inwardly of each cheek plate, and having a sealing engagement at its periphery with the inside of said chamber to close the same.

Signed at Seattle, King County Washington this 11th day of April 1922.

ARTHUR E. HANSEN.