Dec. 16, 1924. 1,519,252

E. E. GREVE

TRAVELING BLOCK

Filed March 13, 1922

Fig. 1

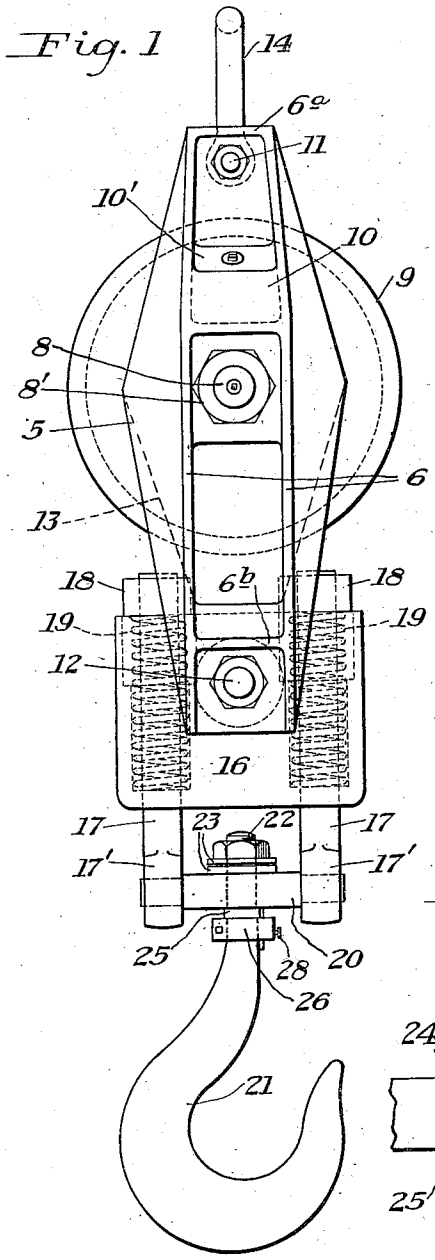


Fig. 2

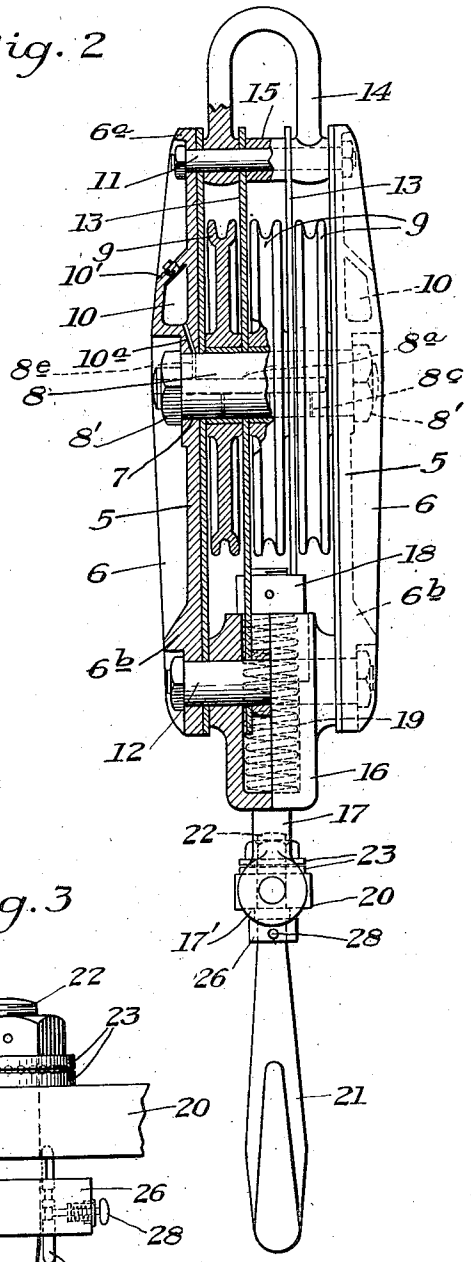
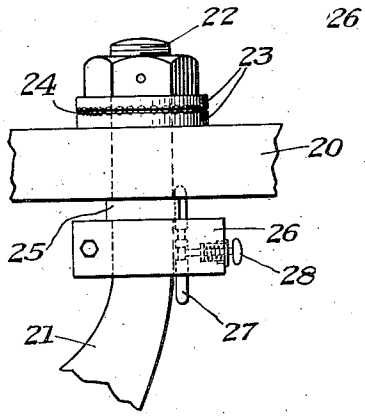


Fig. 3



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UNITED STATES PATENT OFFICE.

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TRAVELING BLOCK.

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To all whom it may concern:

Be it known that I, EDGAR E. GREVE, a citizen of the United States, residing at Bellevue, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Traveling Blocks, of which the following is a specification.

This invention is for a block, and relates particularly to what is known as a traveling block, and used especially in earth drilling outfits.

In drilling operations, the traveling block is used in the rig to carry a section of pipe or other weighty object to be handled. There is generally provided on the block, as now used, a clevis to which a link is attached, this link being in the shape of a letter C, but having a removable strap joining the two ends thereof, and is known as a strapped-C hook. This hook is non-rotatable relatively to the clevis, and is used particularly as a non-rotatable suspension for the water swivel in a rotary drilling operation. When the block is used as an elevator for lifting casing sections or tubings or other heavy articles, a second swiveled hook is suspended from the strapped-C hook, so that the article being lifted may be turned and swung about at will. There is accordingly some delay and inconvenience in using the blocks as heretofore constructed.

Furthermore, when the blocks are passing up and down through the derrick, they frequently come into contact with the finger-boards and other projections on the derrick and get caught.

An important object of the present invention is the provision of a single hook which may swivel or be fixed relatively to the block at the will of the operator, and thereby avoid the necessity of suspending one hook from another.

Another important advantage of the present invention is the provision of resilient means between the hook and the block which will be under tension or compression when the hook is loaded, especially when screwing together or disconnecting sections of pipe, to eliminate damage to the threads.

Other important objects of the invention are to provide a block having an improved shape, so that it will not be so liable to become caught and hung on any part of the derrick when being raised or lowered, and to provide an improved lubricating means for the pulley wheels or sheaves.

My invention may be readily understood by reference to the accompanying drawings, in which:

Fig. 1 is a side elevation of a block constructed in accordance with my invention;

Fig. 2 is a view of the block turned at right angles to the view shown in Fig. 1, part of the block being shown in section and part in elevation; and

Fig. 3 is a detail view of the hook.

Referring to the drawings, 5 indicates the two outside plates which form the shell of the block. These plates are elongated and taper from an intermediate point towards each end in width. Down the central part of each plate are two spaced apart ribs 6 which increase in height from the ends toward the middle portion of the block, or toward an intermediate point slightly above the exact center of the plate. Slightly above the center of each plate, at the point where it is widest, and between the two ribs 6, is a hole, designated at 7, for the reception of the shaft 8 on which the sheaves 9 are carried. On each end of the shaft 8 and between ribs 6, is a nut 8′. Disposed between the two ribs 6 above the opening 7, is an integral oil reservoir 10, which has its outer face flush with the top of the ribs 6, and which has an inclined top face 10′ in which is a filling opening. This reservoir overhangs the nut 8′ to prevent said nut from coming into contact with any projecting part of the rigging when the block is being elevated.

Near the top of each plate is an opening through which a tie bolt 11 is passed, and above this opening and connecting ribs 6, is a transverse rib 6^a having an inclined outer face. This rib overhangs the nut on bolt 11 to prevent it from catching on any part of the derrick. Near the lower end of each plate is a hole through which passes lower tie-bolt 12, and above this tie-bolt, between ribs 6, is a transverse rib 6^b having an inclined top surface.

From the foregoing, it will be obvious that the shape of the blocks is such as to overcome, to a large extent, liability of the block becoming hung on a projecting part of the derrick, such as a finger-board. The increasing width of the blocks toward the center part overcomes this to a large extent

in one direction. The inclined ribs 6, in effect, provide runners to push the block away from any surface it might contact with, and the oil reservoir 10 and transverse ribs 6^a and 6^b protect the various projecting parts.

Mounted on the shaft 8 between plates 5, are spaced apart separating plates or spacing plates 13, through which bolts 11 and 12 also pass. On the shaft 8, between each two separating plates, is a sheave, the sheaves having been hereinbefore designated as 9.

Pivotally mounted on the upper bolt 11 is a clevis 14, the ends of which serve to keep some of plates 13 properly spaced, while a spacing member 15 may be used between the other plates. One end of a cable or rope, not shown, may connect with the clevis in the usual manner.

Leading from oil reservoir 10 to shaft 8 is a passage 10^a, and the shaft 8 is so hollowed or channeled as to feed oil from passage 10^a to each of the sheaves. As illustrating a means for doing this, I have shown a central longitudinally extending passage 8^a in the shaft 8. Communicating with the passage is a radial passage 8^e adapted to be brought into register with the opening in passage 10^a, and receive lubricant therefrom. Also communicating with the passage 8^a are a plurality of radial passages 8^c, one passage being provided for each sheave for the purpose of conveying lubricant to the hubs of the sheaves.

Between the lower ends of the two plates 5 is a body member 16, through which the lower bolt 12 passes. In each side of this block is a hole which extends through the block. In each of these holes is an inverted eye-bolt 17 having the threaded ends thereof projecting above the top of member 16. On the threaded end of each bolt is a nut 18. Each hole is counter-bored throughout a great portion of its depth to receive a compression spring 19, whose upper end engages against the nut 18. Each hole is also preferably counter-bored to a short depth to an even greater diameter to enable the nut 18 to be received therein.

The eyes 17′ of the eye-bolts 17 are connected by a cross member 20 pivoted therein. Bolts 17 and cross member 20 form the lower clevis for the block, but the usual form of clevis, as shown in the top of the block, might be substituted. A suitable form of carrying member, designed to be connected with the swivel or elevator, is provided. As illustrated, this may comprise a hook 21 which has its stem 22 rotatably passed through cross member 20, and a nut is provided on its upper end. A swivel bearing is provided between two disks or washers 23, between which there may be ball bearings 24. A shoulder 25 is formed on the stem or neck of the hook just below cross member 20. A separable or removable collar 26 surrounds the stem just below the shoulder 25. In this collar is a vertically reciprocable pin 27 which passes through an opening therein, and through a groove in the shoulder 25. The upper end of the pin may be projected into a recess in cross member 20 to hold the hook against rotation. By withdrawing the pin, the hook may swivel.

For holding the locking pin in either of its two positions, a spring pressed latch 28 is provided in the collar 26, and the inner end of the latch is adapted to project into either one of two grooves in the lower part of the locking pin.

The hook may thus be locked so that it will not turn for use in drilling, while it may be released to swivel when casings or other articles are to be elevated or lowered. The resilient means for connecting the clevis and block enable the hook to yield when a section of pipe or casing suspended therefrom is being threaded into or out of another section. Damage to the threads is thus less likely to result.

Various changes and modifications may be made in my invention within the scope of the appended claims.

What I claim is:

1. A block including a frame, a sheave in the frame, a clevis carrying member pivotally carried by the frame, and a clevis resiliently connected with said carrying means.

2. A block including a frame, a sheave in the frame, a clevis carrying member pivotally carried in the frame below the sheave, and a clevis resiliently suspended from said member.

3. A block including a frame, a sheave in the frame, a clevis carrying member below the sheave and supported in the frame on a horizontal pivot below the sheave, and a clevis resiliently suspended from said member.

4. A block including a frame, a sheave in the frame, a clevis carrying member below the sheave and supported in the frame on a horizontal pivot below the sheave, a clevis resiliently suspended from said member, and a hook rotatably carried by the clevis.

5. A block comprising a frame, a sheave in the frame, clevis supporting means in the frame below the sheave, a clevis including side members passing through said supporting means and resiliently carried thereby by compression springs confined between said means and the upper ends of said side members, a transverse member connecting the lower ends of the side members and pivoted therein, and a hook carried by the cross member.

6. A block comprising a frame, a sheave in the frame, clevis supporting means in the frame below the sheave, a clevis including

side members passing through said supporting means and resiliently carried thereby by compression springs confined between said means and the upper ends of the side members, a transverse member connecting the lower ends of the side members and pivoted therein, and a hook rotatably carried by the cross member.

7. A block comprising a frame, a sheave in the frame, clevis supporting means pivotally carried in the frame below the sheave, a clevis including side members passing through said supporting means and resiliently carried thereby by compression springs confined between said means and the upper ends of the side members, a transverse member connecting the lower ends of the side members and pivoted therein and a hook carried by the cross member.

8. A block comprising a frame, a sheave in the frame, clevis supporting means in the frame below the sheave, a clevis including side members passing through said supporting means and resiliently carried thereby by compression springs confined between said means and the upper ends of said side members, a transverse member connecting the lower ends of the side members and pivoted therein, and a hook carried by the cross member, said clevis supporting means having recesses therein for the reception of said springs.

9. The combination with a block, of a clevis yieldably carried in the block, a hook rotatably carried by the clevis, and means for locking the hook at will against rotation in the clevis.

10. The combination with a block, of a hook, a clevis connecting the block and the hook, said clevis comprising vertically extending bolts passing through a part of the block and a cross member pivotally mounted on the bolts, and compression springs carried by a part of the block for yieldingly supporting the bolts.

11. A block comprising side plates having ribs on the outer face thereof which increase in height from the ends toward the middle portion thereof, bolts connecting the side plates and projecting therethrough, and transverse ribs having inclined surfaces thereon for holding the projecting ends of said bolts or any nuts thereon from contacting with a part of the structure in which the block is used.

12. A block comprising two spaced apart side plates on the outer face of each of which are two spaced apart vertically extending ribs which increase in height from the ends toward an intermediate point, bolts connecting the two plates and extending therethrough between the two ribs, one of the bolts forming an axle for the sheaves, an integral oil reservoir formed on the plate between the ribs above the bolt which carries the sheave and designed to prevent the end of such bolt or any nut thereon from becoming caught on any part of the structure in connection with which the block is being used, said reservoir being for the purpose of supplying lubricant to the sheaves, and transverse ribs for protecting the ends of the other bolts or any nuts thereon.

In testimony whereof I affix my signature.

EDGAR E. GREVE.