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Block and Tackle Apparatus.

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To all whom it may concern:

Be it known that I, Robert S. Rodier, a citizen of the United States, and a resident of the city of New York, borough of the Bronx, in the county of Bronx and State of New York, have invented a new and Improved Block and Tackle Apparatus, of which the following is a full, clear, and exact description.

This invention relates to block and tackle apparatus primarily designed for use in conjunction with hoisting apparatus.

Prior to this invention when it was desired to use a block and tackle system in conjunction with the boom of a derrick, it was usually found necessary to provide two drums on the derrick so that when light loads were being handled the larger drum might be used to gain more speed and when heavy loads were being handled the smaller drum was used so as to gain power.

The object of this invention is to provide a simple and efficient block and tackle system that may be used as a single block system for handling light loads and as a double block system for handling heavy loads without altering the reeving of the blocks.

This object is accomplished by providing in conjunction with the tackle, the free end of which is connected to the boom of the derrick, a pair of blocks that may be fitted together and used as a single block for handling light loads or that may be separated and one block fixed to the boom of the derrick when it is necessary to handle heavy loads.

This and other objects of the invention will be more clearly understood from the following detailed description and accompanying drawings.

Figure 1 is a side elevation showing the blocks connected to form a single pulley and the tackle connected to the boom of the derrick.

Figure 2 is a view of the blocks showing the reeving:

Figure 3 is a cross section on the line 3-3, Figure 1:

Figure 4 is a side elevation showing the blocks separated and one block connected to the boom of the derrick as used for heavy loads:

Figure 5 is a view of the blocks showing how the power of the block and tackle apparatus may be increased by introducing more sheaves in each block:

Figure 6 is a top plan view of the blocks as shown in Figure 5.

Referring to the above-mentioned figures, a boom 10 is provided with a pulley 11, a U-shaped connecting member 12 through which a pin 13 projects, and a plate 14 which has a clevis-shaped member 15 integral therewith. The block and tackle apparatus, which consists of a pair of blocks 16 and 17 and a tackle 18, is provided for use in conjunction with the boom 10 of the derrick. The block 16 consists of a casing 19 which is constructed from plates and angle irons and has a shaft 20 on which is mounted a sheave 21. This casing is mounted on a plate 43. The shaft 20 of the sheave 21 is mounted at an angle to the sides of the base of the plate 43. The block 17 is also constructed from plates and angle irons and is mounted on a plate 44. This block has a shaft 22 on which are mounted two sheaves 23 and 24. These plates 43 and 44 are provided for attaching the two blocks together and serve as a means for holding the sheave of block 16 at an angle to the plane of the sheaves of block 17. Provided in conjunction with the block 16 are pins 25 which have eyes 28. These pins fit through openings 26 in the base of the casing of the block 17, and bolts 27 which engage in the eyes 28 of the pins 25 serve to lock the two blocks together. The sheave 21 being mounted at an angle to the plane of the sheaves in block 17, the tackle 18 is guided from sheave 23 in block 17, over the sheave 24 in block 17 so that when the two blocks are connected the tackle runs over the sheaves and the two blocks operate as if there was only a single block with one sheave. The becket 29 of the tackle 18 is connected to the connecting member 12 by means of the pin 13.

The base plates 43 and 44 of the blocks 16 and 17 respectively are provided with holes 30 through which the tackle 18 passes. In conjunction with the blocks 16 a guide 31 is provided to guide the tackle 18 into the holes 30 to prevent wear. Holes 32 are provided in the casing 19 of the block 16. In order to connect the block 16 to the boom, the upper end of the casing 19 is inserted between the jaws of the clevis-shaped member 15 and the holes 32 are made to register with the holes 34 in the member 15. A pin 33 is then inserted to connect the block 16 to the member 15.

In connecting the block...
16 to the member 15 the guide 31 serves another purpose and serves as a means for bringing into alignment the openings 34 and 32 so that the pin 33 may be inserted. This block 16 is connected to the boom through the member 14 only when it is desired to use the apparatus as a double block system for raising heavy loads. The block 17 is provided with a clevis 38 as a means for connecting it to the various loads that it may be desired to handle. Another use of the guide 31 is to prevent the blocks 16 and 17 from tilting when the plates are connected together and the blocks used as a single block.

In Figure 4, the blocks 16 and 17 are shown separate as in the case when they are used for handling heavy loads, the block 16 being connected through the member 14 to the boom 10. The becket 29 is connected to the connecting member 12 and the end of the tackle 18 to which the lifting force is applied passes over the pulley 11 mounted in the boom 10. The strains on the ropes are the same as in any ordinary block and tackle system having the same reeving.

In Figure 5 two blocks 16 and 17 are shown but the block 16 has two sheaves 36 and 37. The block 17 has three sheaves 38, 39 and 40 mounted on the axle 20. In this case the total weight of the load is carried by six strands of rope. This apparatus is designed for handling very heavy loads. The blocks might be constructed with more sheaves in each one depending upon the strain it is desired for each rope. In the case of the block 16 since the sheaves are mounted at an angle to the plane of the sheaves in the block 17 it will be necessary to provide two axles 41 and 42 which are parallel to one another, as shown in Figure 6. This block and tackle system may be also used as a block having a single sheave by connecting the blocks 16 and 17 together, in which case the tackle 18 passes over the sheave 35 in block 17, sheave 36 in block 16 to sheave 39 in block 17, and so on over all the sheaves and finally over the pulley 11 in the boom 10.

This block and tackle system may be converted from a double block system involving a standing block 16 and a fall block 17 to a single block system with very little trouble. Speed in handling loads may be obtained by the use of a single drum in conjunction with the derrick. This speed is obtained, in the case of light loads, by converting the double block system to the single block system.

Claims:
1. A hoisting apparatus of the class described, comprising two blocks having a plurality of sheaves therein, tackle for reeving the blocks, and means for locking the blocks together to make a single block.

2. A hoisting apparatus of the class described comprising a block having one or more sheaves that may be used as a fixed block, movable block having one more sheave than said first block, tackle for reeving the blocks, and means for locking the blocks together in order to use them as a single block.

3. In combination with a derrick boom, a hoisting apparatus comprising a block having one or more sheaves, means for detachably connecting the said block to the boom, a second block having one more sheave than said block, a tackle for reeving the blocks, means for connecting the free end of the tackle to the boom, and means for connecting the two blocks together when the boom block is detached from the boom to form a single block.

4. In combination with a derrick boom, a hoisting apparatus comprising a pair of blocks, tackle for reeving the blocks, means for connecting one block to the boom for lifting heavy loads, and means for connecting the blocks together to make a single block for lifting light loads.

5. A hoisting apparatus of the class described, comprising two blocks, tackle for reeving the blocks, the sheaves of one block being mounted at an angle so as to guide the tackle from one sheave in the other block to the next sheave to it, and means for connecting the blocks together to form a single block.

6. In combination with a hoisting apparatus, a block assemblage of the class described, comprising two separate blocks, one for use as a standing block and the other as a fall block, and means associated with the blocks of the block assemblage for locking them together to form a single block.

7. A block assemblage of the class described, comprising a standing block, a fall block, and means for supporting them in alignment with one another to form a single block.

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