Aug. 11, 1942. A. R. MAIER 2,292,457

TRAVELING BLOCK

Filed Aug. 14, 1941

FIG. 1.

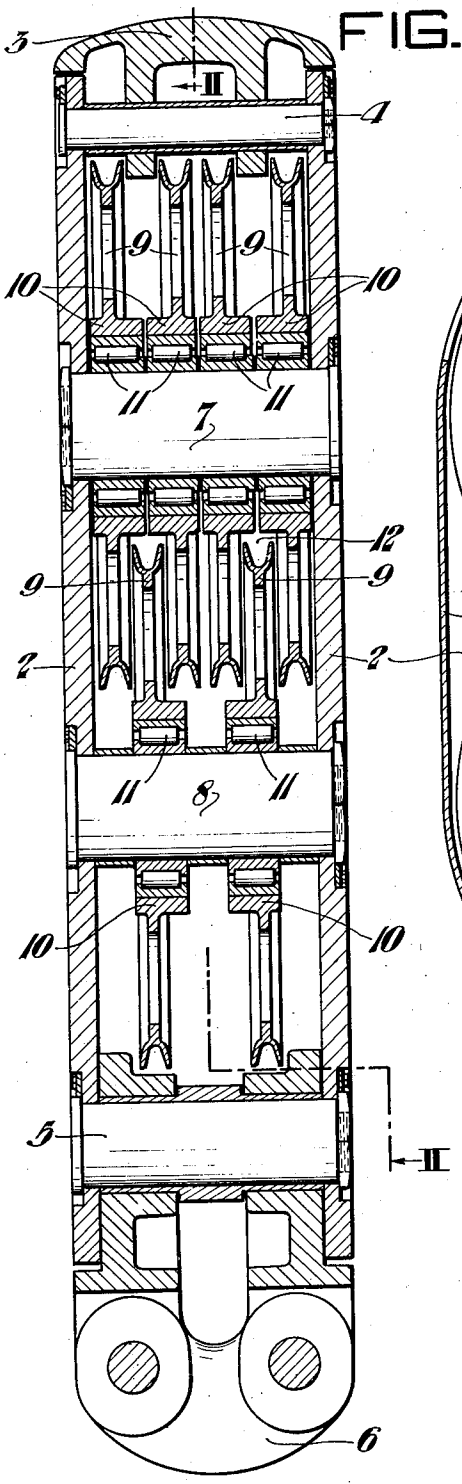
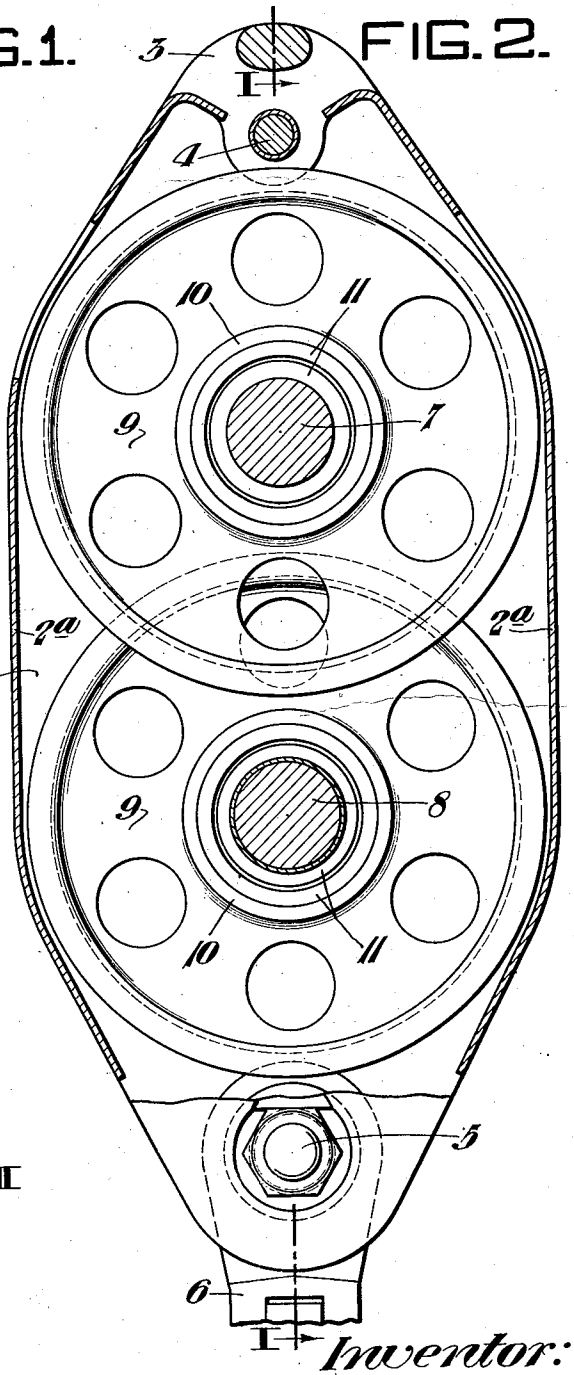


FIG. 2.



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TRAVELING BLOCK

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3 Claims. (Cl. 254—192)

This invention relates to improvements in traveling blocks particularly adapted for use in hoisting in connection with the drilling of wells, and has in view to provide a traveling block capable of free travel in the restricted confines of a well derrick.

In such derricks, the distance between the derrick floor and the crown block often provides inadequate clearance for the traveling block and an attached well casing section. Further, when the casing sections are stacked upright in a corner of the derrick, as is the practice, the transverse area within the derrick is materially decreased and frequently crowds the traveling block in the upper portion of its travel.

It is a prime object of my invention to provide a traveling block of minimum thickness and height, capable of withstanding heavy loads, and including adequate provision for the necessary reeving for well drilling hoisting operations.

Additional objects and advantages will become apparent from the following description taken in connection with the accompanying drawing wherein:

Fig. 1 is a longitudinal sectional view of a traveling block embodying my invention, said section being indicated by the line I—I of Fig. 2; and

Fig. 2 is a sectional view thereof taken on the line II—II of Fig. 1.

Referring to the drawing, the body of the traveling block comprises a pair of side plates or cheeks 2 of conventional outline, joined at their upper ends by a hood 3 through a connecting bolt 4, and joined at their lower ends by a clevis pin 5 mounting a clevis 6. Side guards 2a extend between and space the cheeks 2 to complete the body of the block, said guards being apertured in the usual manner for accommodating the lines. Intermediate the bolt 4 and pin 5 is provided a pair of sheave pins 7 and 8, said pins being spaced apart longitudinally of the block body a sufficient distance to enable the close nesting overlapping disposition of the respective sheaves carried thereby.

By such means, it is possible to decrease the overall length or height of the traveling block and at the same time provide a strong durable device. As shown, the sheaves 9 of equal diameter have hubs 10 containing bearings 11 mounted on the respective sheave pins, and the said pins 7 and 8 are spaced apart a distance substantially equal to the overall radius of a sheave plus the radius of a sheave hub 10, to which dimension is added a small amount of clearance. In addition to the foregoing decrease in height, the bolt 4 and hood 3 are disposed immediately above the upper extent of the sheaves 9 on pin 7, and the clevis 6 and pin 5 are likewise disposed immediately below the lowermost extent of the sheaves 9 on pin 8.

Therefore, in comparison with a block having the same hood, clevis and diameter of sheaves, the arrangement and proportions of my invention reduce the overall length of the block to a minimum without sacrificing strength and capacity.

It is a further feature of my invention to provide for reducing the overall thickness of the block, i. e., the distance between and including the cheeks 2 thereof. To this end, the plurality of sheaves 9 on one of the pins, as for example, sheave pin 7, are formed with the hubs 10 thereof having substantial projection beyond one face only of the sheaves as shown. Hence, by disposing said sheaves in pairs with their projecting hub portions inwardly toward each other, an intervening space 12 is provided to accommodate a sheave on the other sheave pin 8 in the close nesting overlapping relation hereinbefore described.

By making the projection of the hub portion beyond the adjacent face of its sheave not more than one-half the width between faces of the intervening sheave on the other pin, the assembled nested sheaves will have minimum overall dimension for each three sheaves, two sheaves being located on one pin, and an intervening sheave on the other pin. The amount of compactness thus obtained provides for the reduction of the overall thickness of the block employing a plurality of sheaves on one pin thereof, and at least one sheave on the other pin.

While the illustrated traveling block has four sheaves on the upper pin 7 and two sheaves on the lower pin 8, thereby presenting a multiple block well balanced and capable of the usual type of reeving employed for hoisting, variations in the number of sheaves may be employed within the scope of the invention.

A most important feature of the foregoing arrangement and proportion of parts resides in the ability to maintain the necessary bearing structure and capacity in the traveling block of reduced size so produced. Thus, by extending the sheave hubs at one side only, it is possible to maintain the same axial bearing dimension as employed in former blocks having sheaves provided with symmetrical hubs, and by forming the cheeks 2 and pins 7, 8 of adequate strength, the block of my invention is therefore capable of

withstanding heavy loads in practice. And due to the reduced overall dimension thereof, said block has material advantages in well drilling operations, particularly in connection with the travel of such a block in the upper confines of a derrick.

The sheaves 9 on the lower pin 8 are shown in the same form as to their hubs 10 as those on pin 7, since it is advisable from the standpoint of manufacture to make all the sheaves alike. However, the hubs of the sheaves on said pin 8 may be otherwise formed if desired.

By providing pins 7 and 8 of adequate strength and providing proper support therefor through the construction of the cheeks 2, I am enabled to provide a traveling block of the character stated without the use of spacers or plates intervening between the sheaves and extending longitudinally throughout the block, such as have been employed in the construction of former traveling blocks. As designed, my improved block is greatly simplified and can be manufactured and assembled more economically than such former blocks.

Various changes and modifications are contemplated within the scope of the following claims.

I claim:

1. In a traveling block of the character described, a pair of parallel stationary sheave pins, a pair of sheaves mounted on one of the pins and a third sheave on the other pin nesting between the pair of sheaves, the pins being spaced apart a sufficient distance for substantial overlapping of the nested sheaves, said pair of sheaves each having a bearing hub projecting beyond one face only of its sheave, the projecting hubs of said pair of sheaves being disposed toward each other and each having an axial dimension not exceeding one-half of the width between the faces of the third sheave, whereby the nested sheaves have minimum overall axial dimension, bearings extending axially throughout said hubs rotatably supporting the pair of sheaves on their pin and a bearing rotatably supporting the third sheave on its pin.

2. In a traveling block of the character described, a pair of parallel stationary sheave pins, a plurality of sheaves mounted on each pin, the sheaves on one pin being arranged in pairs and single sheaves on the other pin nesting between the sheaves of the said pairs, the pins being spaced apart a sufficient distance for substantial overlapping of the nested sheaves, the sheaves of the pairs each having a bearing hub projecting beyond one face only of its sheave, the projecting hubs of the sheaves of the pairs being disposed toward each other and each having an axial dimension not exceeding one-half of the width between the faces of the respective single sheaves, the pairs of sheaves being disposed adjacent each other on their pin, whereby the plurality of nested sheaves have minimum overall axial dimension, bearings extending axially throughout said hubs rotatably supporting the pairs of sheaves on their pin, and bearings rotatably supporting the single sheaves on their pin.

3. In a traveling block of the character described, a pair of parallel stationary sheave pins, a pair of sheaves mounted on one of the pins and a third sheave on the other pin nesting between the pair of sheaves, all of said sheaves being of uniform diameter, said pair of sheaves each having a bearing hub projecting beyond one face only of its sheave, the projecting hubs of said pair of sheaves being disposed toward each other and each having an axial dimension not exceeding one-half of the width between the faces of the third sheave, whereby the nested sheaves have minimum overall axial dimension, bearings extending axially throughout said hubs rotatably supporting the pair of sheaves on their pin, a bearing rotatably supporting the third sheave on its pin, the sheave pins being spaced a distance substantially equal to the overall radius of the sheaves plus the radius of the hubs thereof.

AUGUST R. MAIER.