Dec. 13, 1938. W. H. McKISSICK 2,140,086

FLOOR BLOCK

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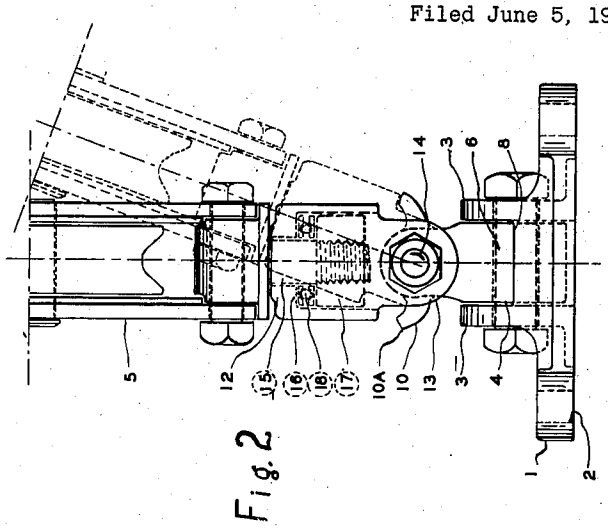


Fig. 2

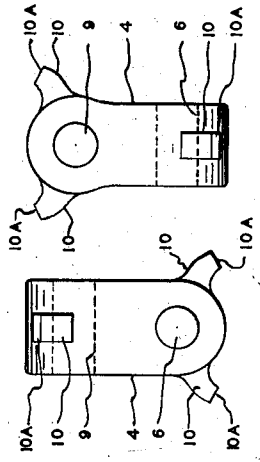


Fig. 7

Fig. 6

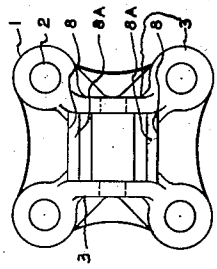


Fig. 3

Fig. 1

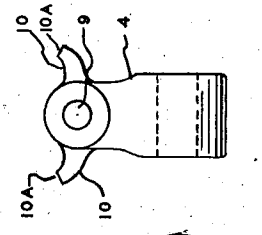


Fig. 5

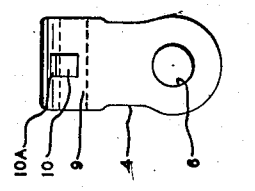


Fig. 4

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FLOOR BLOCK

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5 Claims. (Cl. 254—195)

This invention relates to pulley blocks and particularly to that type of pulley block commonly designated as a floor block. This type of block is ordinarily anchored to a horizontal base, such as a derrick floor, by means of a base plate and pedestal and receives a cable running from the floor block to a winch.

It is an object of this invention to provide a floor block which will permit various angular movements of the pulley block to accommodate changes in direction of the cable without injury to the block or binding of the cable.

It is a particular object to provide a pedestal which will permit swinging of the pulley block in a vertical plane and a simultaneous swinging of the pulley block in another plane which is at an angle to the first plane of movement. An additional object is to provide an arrangement whereby the pulley block may rotate about the vertical axis of the pedestal of the device while engaging in the swinging movements referred to.

A further object is to provide means in conjunction with the base plate and pedestal to limit the respective angular movements of the pulley block.

A still further object is to provide an improved form of adapter for connecting the pulley block to the base plate in the complete assembly.

Other objects and advantages will be apparent from the following description and the accompanying drawing which illustrates a preferred form of this invention. In the drawing,

Fig. 1 is a side elevation, partly in section, illustrating the general construction of the device of this invention.

Fig. 2 is an end elevation of the device shown in Fig. 1.

Fig. 3 is a plan view of the base plate.

Figs. 4 and 5 are, respectively, side and end elevations of the adapter of this invention, and

Figs. 6 and 7 are, respectively side and end elevations of another advantageous form of adapter.

Referring to the drawing, the floor block comprises a base plate 1, having apertures 2 extending through the corners thereof for the reception of bolts or other means for fastening the base plate to the floor of a derrick or the like. Mounted on the base plate are two upstanding arms 3 spaced apart to receive the lower end of an adapter 4 which serves as a supporting post for a pulley block 5, which is of the usual construction and is only partially indicated on the drawing. The arms 3 are provided with openings which register with a bore 6 which extends transversely through the lower portion of the adapter, and a bolt 7 passes through bore 6 and extends through the openings in arms 3. This means of connecting adapter 4 to base plate 1 permits a hinge movement of the adapter in a plane which is vertical with respect to the plane of the base plate. Stock is provided in the base plate to form oppositely disposed stops 8 between the arms 3 to limit the extent to which adapter 4 will swing in the aforesaid vertical plane. The swing of adapter 4 may be limited, in this manner, to any degree desired, although stops 8 are preferably so positioned as to limit the arc of swing of the adapter to about 45 degrees on each side of the vertical axis of the base plate, by providing an angle of 90 degrees between the upper faces 8a of the stops 8.

At the opposite end of adapter 4, a second bore 9 is provided, which extends transversely through the adapter in a direction at an angle, preferably a right angle, to that of bore 6. A pair of lugs 10 are positioned on opposite sides of bore 9 and extend laterally therefrom. Pulley block 5 is connected to the upper end of adapter 4 by means of a swivel 11, which includes a housing 12 from the lower end of which a pair of spaced arms 13 extend and are adapted to receive between them the upper end of adapter 4. Openings are provided in arms 13 which register with bore 9 for receiving a bolt 14 which extends through bore 9 and the openings in the arms 13, thus providing a hinge connection for the swivel 11 which is adapted to permit the swivel to swing about the upper end of adapter 4 in a plane which is at an angle to the plane of movement of adapter 4 on the base plate 1. The lugs 10 have upper faces 10a which are presented at an angle to the bottom of housing 12 and limit the movement of the housing in its arc about the upper end of adapter 4, as is shown by the dotted outlines in Fig. 2. Lugs 10 and faces 10a are generally so arranged as to limit the extent of the swing of housing 12 to less than about 15 degrees from the vertical on each side of bore 9, or a total of less than 30 degrees. Greater or less swing of housing 12 may be permitted, if desired, by suitable positioning of lugs 10 on adapter 4.

Pulley block 5 is attached to one end of a post 15, the other end of which extends through cover plate 16 into the interior of housing 12 where it is engaged by a nut 17. A roller bear-

ing collar 18 surrounds the lower end of post 15 and is locked between the under side of cover plate 16 and nut 17, thus permitting post 15 to rotate freely within housing 12 and provide the swivel means whereby block 5 may rotate freely about the vertical axis of adapter 4.

From the foregoing it will be readily apparent that by means of adapter 4, the pulley block 5 may swing on base plate 1 in one direction, as shown in the dotted outlines in Fig. 1, and may, at the same time, swing about the end of adapter 4 in a different direction but preferably in a direction which is at right angles to the direction of swing of the adapter with respect to the base plate.

The first mentioned movement is advantageous in leading a draw works cable, which descends from the upper portion of a derrick, through the pulley block and thence more or less horizontally to a winch or other winding means.

The second movement permits lateral sway of the block to allow for the lateral movement of the cable as it is spooled on a winch. By permitting such lateral sway of the pulley block, the cable will remain centered in the pulley sheave and thus prevent the excessive wear of the sides of the sheave, which occurs with blocks heretofore used which do not allow such movement of the pulley block.

Free rotation of pulley block 5 in swivel 11 permits receiving a cable into the sheave from any direction, other than the vertical, when necessary.

Figs. 6 and 7 illustrate a modified form of adapted 4, in which each end thereof is supplied with similar lugs 10 so that the adapter is symmetrical and the ends may be used interchangeably in connection with a base plate which has no stops 8. The lugs opposite bore 6 of this form of adapter will cooperate with the stock of the base plate to limit the swing of the adapter with respect to the base plate. The angle included between each pair of lugs may be equal or different as desired to meet any particular practical condition.

Various modifications may be made in the size, form and relation of parts of the device of this invention without departing from the scope of the appended claims.

What I claim and desire to secure by Letters Patent is:

1. A floor block comprising a base plate adapted to be secured to a derrick floor or the like, an adapter hingedly connected to the base plate for swinging movement about a horizontal axis, a swivel hingedly connected to said adapter for swinging movement about an axis arranged at right angles to the first-mentioned axis, lugs projecting from opposite sides of the adapter and cooperating with the base plate to limit the swinging movement of the adapter, other lugs arranged at right angles to the first mentioned lugs and also projecting from opposite faces of the adapter to limit the swinging movement of the swivel, and a pulley block rotatable in said swivel.

2. A floor block comprising a base plate adapted to be secured to the floor of a derrick or the like, an adapter hingedly connected to the base plate and adapted to swing about a horizontal axis, a swivel hingedly connected to said adapter and adapted to swing about an axis arranged at right angles to the first-mentioned axis, a pulley block rotatable in said swivel and adapted to guide a cable, and means limiting the respective swinging movements of both the adapter and the swivel an extent sufficient to permit limited swinging movement of the pulley block relatively to the base plate while maintaining the cable centered on said pulley block.

3. A floor block comprising a base plate adapted to be secured to the floor of a derrick or the like, an adapter hingedly connected to the base plate and adapted to swing about a horizontal axis, a swivel hingedly connected to said adapter and adapted to swing about an axis arranged at right angles to the first-mentioned axis, a pulley block rotatable in said swivel and adapted to guide a cable, cooperating means on the adapter and base plate to limit the swinging movement of the adapter, and lugs projecting from opposite sides of the adapter, and cooperating with the swivel to limit the swinging movement of the swivel an extent sufficient to normally maintain the cable centered on said pulley block.

4. A floor block comprising a base plate adapted to be secured to a derrick floor or the like and provided with upstanding lugs having horizontally disposed bores, a substantially straight adapter projecting upwardly from the base plate and having a bore at its lower end in alignment with the bores of said lugs, means extending through said bores and hingedly connecting the adapter to the base plate for movement about a horizontal axis, said adapter having a bore in its upper end arranged at right angles to the bore in its lower end, a swivel, means passing through the swivel, and through the bore in the upper end of the adapter for hingedly connecting the swivel to the adapter for swinging movement about an axis arranged at right angles to the first-mentioned axis, a pulley block rotatable in said swivel and adapted to guide a cable, and means limiting the respective swinging movements of both the adapter and the swivel an extent sufficient to permit limited swinging movement of the pulley block relatively to the base plate while maintaining the cable centered on said pulley block.

5. A floor block comprising a base plate adapted to be secured to a derrick floor or the like, an adapter hingedly connected to the base plate for swinging movement about a horizontal axis, a housing hingedly connected to the adapter for swinging movement about an axis arranged at right angles to the first-mentioned axis, said housing having an aperture in its upper end, a post extending loosely through said aperature into the housing and having a threaded lower end portion, a nut in the housing in threaded engagement with the threads of the post, a pulley block rotatably mounted on said post and adapted to guide a cable, and means limiting the respective swinging movements of both the adapter and the housing an extent sufficient to permit limited swinging movement of the pulley block relatively to the base plate while maintaining the cable centered on said pulley block.

WILLIAM H. McKISSICK.