spondingly increase the strength of the blocks Calculation will show that in most instances using a safety factor of 10 for the rope will automatically keep the load on blocks corresponding to the rope size within safe working load limits

Blocks should be plainly marked with their safe working loads as specified by their manufacturers, and the total weight on the tackle never should exceed this

Breaking strengths of fiber ropes are shown in Chapter 21, "Ropes, Chains, and Slings" Safe working loads for rope used in block and tackle assemblies are, conversely, 1/10 of the block's breaking strength, based on a safety factor of 10, as before

For new rope, to find the required breaking strength, proceed as follows For each sheave 3 in in diameter or larger, add 10 per cent to the weight of the load to compensate for friction loss Divide this figure by the number of ropes or parts running from the movable block, and multiply the resultant figure by a safety factor of 10

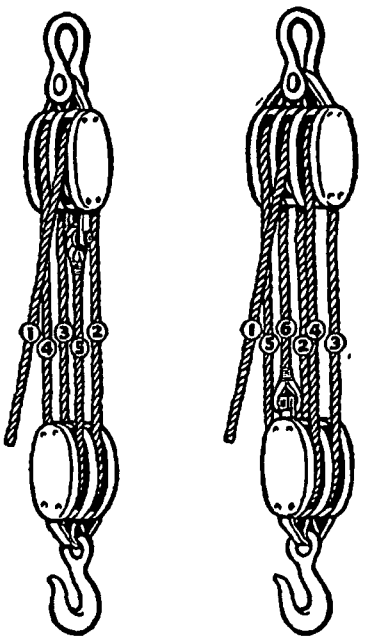
For example, a load to be lifted weighs 2,000 pounds and the tackle consists of two double blocks—four sheaves, four rope parts at the movable block Friction loss (10 per cent for each sheave) = 40 per cent, or 800 pounds, 2,000 + 800 = 2,800 pounds, which divided by 4 (the number of parts at the movable block) = 700 Applying the safety factor of 10 (10 x 700) gives 7,000 pounds, the required breaking strength of the rope New manila rope of ⅞-inch diameter has a breaking strength of 7,700 pounds and therefore is the proper size for the load.

The safe working load for two double blocks made for rope of ⅞-inch diameter, as given by a prominent manufacturer for one series of its standard blocks (regular mortise, inside iron strapped blocks, with loose side hooks, intended for use with manila rope), *is 2,000 pounds—the equivalent* of the total load in the example

The rope should be attached to the block with a thimble and a proper eye splice

A mousing of yarn or small rope should be placed on the upper hook of a set of falls as a precaution against its accidental detachment.

Blocks should be inspected thoroughly and frequently, with particular attention to all parts subject to wear



Double and Double Triple and Double

Fig. 18-21. Reeving tackle blocks Lead line and becket line should come off a middle sheave when blocks contain more than two sheaves The upper and lower blocks then will be at right angles to each other, eliminating the tendency to tip and the accompanying losses in efficiency

Fig 18-21 shows how tackle blocks should be reeved

If the sheave holes in blocks are too small to permit sufficient clearance, excessive surface wear of the rope will occur Likewise, excessive internal frictional wear on the fibers will occur if the diameter of the sheave is too small for the rope

When men are using block and tackle in confined spaces, the pulley block must be guarded so that their hands cannot be caught between the pulley and the rope

When blocks and falls are used to lift heavy materials or to hold heavy loads in suspension, as on heavy duty scaffolds, wire rope is more serviceable than fiber rope