The present invention relates to ladder attachments, and in particular to a hoisting apparatus adapted to be conveniently applied to a ladder of conventional design.

One object of the invention is to provide a hoisting attachment for ladders which can be easily applied and removed without necessitating the use of various clamping devices and the like. Hence, is formed of rigidly connected parts and requires no adjustments when being applied to the holder.

Another object is to provide a hoisting attachment for conventional ladders in which the hoisting cable can be manipulated from a position adjacent the foot portion of the ladder to enable the operator to stand clear of the load without exerting an outward pulling force on the foot portion of the ladder.

Another object is to provide a hoisting attachment for ladders having a supporting bracket arranged such as to distribute the hoist load over a relatively great length of the ladder between spaced apart ladder rounds.

Another object is to provide a hoisting attachment for ladders of conventional design having a removable boom arm swiveled to the bracket in such a manner as to afford operation thereof from either side of the ladder.

Another object is to provide a hoisting attachment for ladders in which the boom arm and bracket are so constructed as to form a couple to exert opposite and non-concurrent forces on the ladder in a direction to force the lower end of the ladder toward the object against which it is propped, while the other end is held immovable against said object.

Another object is to provide a hoisting attachment for ladders and scaffolds which can be easily fabricated without the use of expensive welding fixtures and which can be quickly and conveniently assembled on the ladder or other support when its use is desired.

Another object is to provide a hoisting attachment for ladders which is suspended or hung from the underside of the ladder with the hoist or boom arm projecting through a pair of adjacent ladder rounds so as not to interfere with the normal use of the ladder throughout the major portion of its length. The boom or hoist arm is arranged to extend outwardly from the front of the ladder and can be conveniently swiveled to one side or the other out of the way during the normal use of the ladder.

Other objects and advantages of the invention will become apparent during the course of the following description of the accompanying drawings wherein:

Figure 1 is a side elevational view of the hoisting attachment showing the manner in which the hoist bracket is applied to the rounds of a conventional ladder with the boom or hoist arm projecting through adjacent ladder rounds.

Figure 3 is a perspective view of the hoisting attachment showing the bracket removed and illustrating various structural details of the bracket and the manner in which the boom or hoist arm is swiveled thereon.

Figure 3 is a horizontal cross-sectional view taken on line 3—3 of Figure 2, looking in the direction of the arrows and showing the manner in which the sections of the brackets are pivotally connected to facilitate folding, and also showing the position of the socket for receiving the lower end of the boom or hoist arm, and

Figure 4 is a horizontal cross-sectional view taken on line 4—4 of Figure 2, looking in the direction of the arrows, and showing the swivel support or collar for the boom or hoist arm and the manner in which it is affixed to the side frame members.

In the drawings, and more in detail, there is shown for the purpose of convenience of illustration a conventional ladder generally designated 5 (Fig. 1) which is attached the hoisting device embodying the invention generally indicated 6. The ladder 5 includes a pair of stiles 7 connected by vertically spaced ladder rounds 8. The upper end of the stiles 7 are also connected by a plate 9 which is adapted to be affixed to the eave strip of a roof E or other covering for the building B. If desired, the plate 9 can be held in place by wire, screws or other fastening means (not shown).

The hoisting attachment 6 includes a bracket structure formed of a pair of spaced parallel angle bars 10, one of the flanges of each being extended and angularly bent to provide a ladder round engaging jaw member 11. Welded to the same flange of each angle bar 10 is a angle bracket 12 which is spaced from the angularly bent portion 11 and is adapted to cooperate therewith to form parallel ladder round engaging portions. The angle bars 10 are held in spaced apart relation by means of transverse plates 14 and 15 which have their ends welded to one of the flanges of each angle bar to form a frame structure of generally rectangular shape.

Pivotally attached to the end of each of the angle bars 10 is a supporting bar 16 which is held in place by suitable fastening elements such
as the bolts and nuts 17 and 18 respectively. The supporting bars 16 are connected adjacent their upper ends by means of a transverse bar 19 and the free ends of the supporting bars 16 are twisted as at 20 and terminate in ladder round engaging hooks 21.

The boom or hoist arm 22 is formed of round metal stock (either hollow or solid) and is of L-shaped construction to provide a vertical standard portion 23. The lower end of the standard portion 23 is received in a tubular socket 24 welded to the cross plate 18 as at 25. The intermediate portion of the standard 23 is supported by a collar 26 which is welded to a curved intermediate portion 27 of the cross bar 19, (Figure 4). It is to be noted, that the collar 26 is offset vertically a slight distance from the socket 24, and that said socket 24 and collar 26 are positioned at an angle to the cross plate 15. Thus, the standard portion 23 of the boom or hoist arm 22 extends rearwardly when the hoisting attachment is in position as shown in Figure 1.

The free end of the hoisting boom or arm is provided with an opening for receiving an eye bolt 30 having a retaining nut 31 threaded on one end to securely hold the same in place. A tackle block 33 has its hook 34 received in the eye of the bolt 30 and a pulley or sheave 35 is pivotally mounted in the tackle block by means of a pin 36.

The hoisting cable 38 is trained over the pulley or sheave 35 and can be provided with hooks or other grappling members to facilitate attachment of various objects to one end of the cable, while a pulling force is exerted on the opposite end of the cable or rope 38. It will be noted that the workman can stand adjacent the foot of the ladder and in front thereof while exerting a pulling force on the rope or cable 38, and that when such a force is applied with the ladder 5 at an angle shown in Figure 1, the frame structure of the hoisting attachment 5 exerts opposite and non-concurrent forces on the ladder rounds upon which it is supported in the same sense as a couple. Hence, a downward force applied by the rope or cable to hoist various weights and loads will exert an inward force on the lower foot portion of the ladder in the direction of the building 5, while the upper end is held rigid by the anchor plate 9. Thus, the moment of the force applied will cause the lower end of the ladder to be wedged into tight ground engagement and will stabilize the ladder.

It will readily be observed, that the hoisting attachment can be selectively positioned on the ladder 5 by placing the round engaging jaws 11—12 and hooks 21 over certain spaced apart ladder rounds 8. When the hoisting attachment is in position as shown in Figure 1, the hoisting boom or arm standard 23 extends at a slight angle to the bracket structure and passes between adjacent ladder rounds so that the arm 22 can be swung from its forward position (Fig. 1) to either side of the ladder.

When the hoisting attachment is not in use it is removed from the ladder 5 and can be conveniently folded by removing the boom arm standard 23 from the socket 24 and collar 26, and swinging the supporting arms 16 on their pivot points 17 to a position parallel with the angle irons or bars 10.

It is further to be understood, that the form of the invention herewith shown and described is to be taken as a preferred embodiment of the same and that various changes in the shape, size and arrangement of parts can be resorted to without departing from the spirit of the invention or the scope of the subjoined claim.

I claim:

In a hoisting attachment for ladders, a bracket structure having vertically spaced apart sets of ladder round engaging jaws for supporting said bracket beneath an inclined ladder, an upwardly extending tubular socket on said bracket structure, a collar secured to said bracket structure above and in spaced axial alignment with said socket, a vertical standard with its lower end received in said socket and passing upwardly through said collar, a boom arm on said standard extending laterally therefrom to project between adjacent ladder rounds, a tackle block suspended from the outer end of said boom arm having a cable sheave and cable for lifting various objects toward the upper end of said ladder.

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