Feb. 10, 1953 J. N. WILLIAMS 2,628,071

LADDER HOISTING ATTACHMENT

Filed June 17, 1949

Fig. 1.

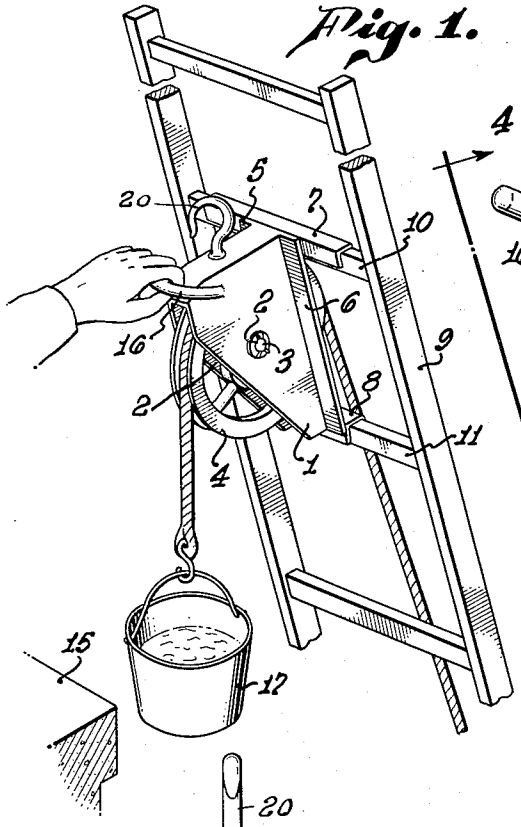


Fig. 2.

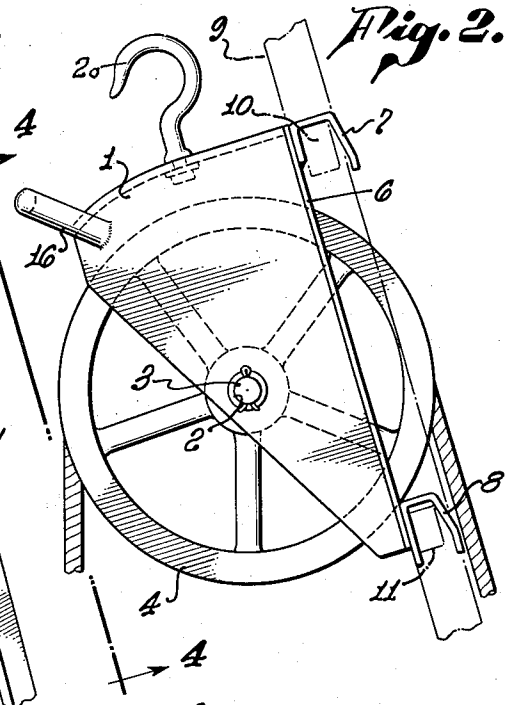


Fig. 3.

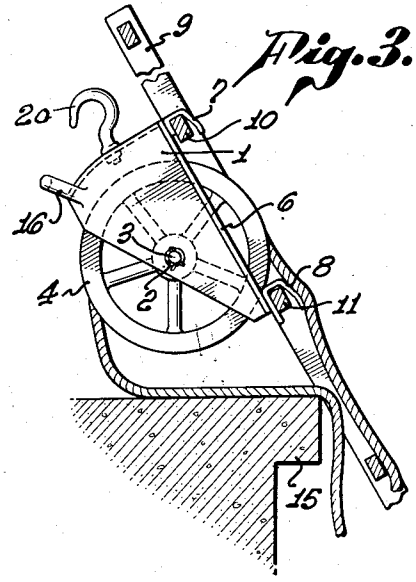
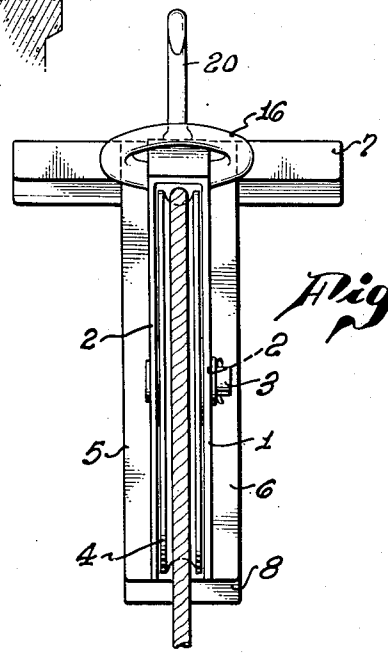


Fig. 4.



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LADDER HOISTING ATTACHMENT

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6 Claims. (Cl. 254—195)

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The present invention relates to a hoisting mechanism adapted for and primarily intended for attachment to a ladder such as used by roof construction and repairing firms.

It is the general object of the invention to provide a hoisting attachment for a ladder which is simple, inexpensive and convenient to operate. It is a further object of the invention to provide a device which may be attached to the rungs of a ladder in any required vertical position thereof to the end that the device may be used on any ladder irrespective of the length thereof so long as the distance between the rungs of the ladders used remains uniform. A still further object is to provide a device in the form of a single, rigidly formed unit which, when attached to the rungs of a ladder, remains firmly and unshakably in position thereon.

This and other objects of the invention, together with the many advantageous features thereof, will be better understood upon the perusal of the following detail description and by referring to the accompanying drawings, of which:

Fig. 1 is a perspective fragmentary view of a ladder to the rungs of which the device of the invention is shown attached, as in practice;

Fig. 2 is a side elevational view on a larger scale of the device as it appears when attached to a ladder;

Fig. 3 is a substantially corresponding view of the device of Fig. 1 as it appears when the ladder between hoisting operations is resting against a building; and

Fig. 4 is an end view of the device taken in the direction of the arrows of Fig. 2.

As shown in the drawings, the device of the invention includes, generally, a U-shaped frame which is perforated to receive a stud 3 on which a pulley 4 is hung to rotate within the side members 1, 2 of the frame. These side members are along the outer edge of the frame shown bent at right angles to form flanges 5, 6 which are added in order to increase the rigidity of the frame and at the same time to make it possible to use much lighter material in the frame. An additional advantage of these flanges is that they provide wide bases upon which to mount cross members 7, 8. These members are channeled and properly proportioned fittingly to enter upon and to ride on the rungs 10, 11 of a ladder 9. They may be fastened to the flanges of the frame in any suitable manner as by a welding operation. The upper member 7 is designed to carry the full load of the weight of the device and the parts held suspended therefrom. It should, for this reason, be

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made wide enough substantially to occupy the full length of the rung upon which it is hung. The function of the lower member 8 is to maintain the frame in position adjacent the inner surface of the ladder but not to carry the load thereon. It is for this reason set a little closer to the upper member than the distance between the rungs of the ladder.

In practice, this hoisting device is attached to the rungs of a ladder at the required height above the ground and it is important to note that the device is mounted to project inwardly from the ladder a distance above the roof edge or parapet 15 of a building. While in this position, which is best indicated in Fig. 3, the wheel of the device takes the position so far above and within the edge of the roof as to make it impossible for a person on the ground to operate the hoist. It becomes necessary, and it is commonly accepted practice, manually to swing the ladder a distance away from the roof, substantially as indicated in Fig. 1, so as to obtain clearance space for the passage of a pail 17 or any other material which may be required on the roof during the construction or repair thereof. The frame 1 is, for this purpose, shown made with an inwardly projecting handle 16, by means of which the outward swinging movement of the ladder may be greatly facilitated.

It is most important to note that the wheel frame is attachable to the inner surface of the ladder at any desired height thereof. Other devices have come to my notice which are designed for similar use but the wheel framing is, in such devices, mountable on the outer surface of the ladder and the wheel is a separate structure which is freely hung on the frame above the brackets which fasten the device to the ladder rungs for independent swinging movement relative thereto; such devices can only be attached to the two top rungs of the ladder unless the pulley is so small that it will pass between the rungs of the ladder. But such pulley and frame, if made substantial enough to carry the loads for which such attachments are designed, are of such short leverage that it is too difficult for one person to operate. In the present device, as illustrated in the drawings, the wheel is substantialy clear of the ladder rungs and can be made entirely clear thereof, if preferred. It is rigidly mounted for rotation within its frame. All danger of shifting or swinging movement of the assembly, during hoisting operations is, for this reason, entirely eliminated.

It should, in view of the foregoing discussion,

be clear to anyone familiar with such hoisting operations, that any available ladder having the required uniform distance between the rungs may be used in connection with the present device; whereas, in other types such as above referred to, a particular length of ladder may be required for each roof construction or repairing operation. It is also important to remember that the device of my invention, as above explained, is a single unit which, when hung on the rungs of a ladder, remains firmly in position thereon and is incapable of shifting or swinging movement relative thereto.

When the wheel frame is fitted at the top thereof with a hook, such as indicated at **20** in the drawing, it is seen that the device, when removed from the ladder, forms a complete pulley assembly for general use in cases where no ladder is required. But it is important to note that in all cases where the device is attached to a ladder this hook is entirely spaced apart therefrom and does not in any way interfere with the mounting or operation of the device. Since only a small portion of the wheel extends into the space between the rungs of the ladder, it is seen that a relatively very large wheel may be employed and the effort of performing the hoisting operation greatly lightened.

I claim:

1. A hoisting device attachable to the inner surface of a ladder comprising, a frame having flat side walls, an upper and a lower cross-member secured to the outer edges of said walls, the members being shaped to engage any two adjacent rungs of the ladder firmly to maintain the frame in inwardly projected position on the ladder, and a grooved wheel rigidly seated for rotation within the inwardly projecting side walls of the frame.

2. A hoisting device attachable to the inner surface of a ladder comprising, a frame having flat side walls and flanges laterally extending from the outer edges of said walls, an upper and a lower cross-member secured to said flanges and shaped to engage any two adjacent rungs of the ladder firmly to maintain the frame in inwardly projected position on the ladder, and a grooved wheel rigidly seated for rotation within the inwardly projecting side walls of the frame.

3. A hoisting device attachable to the inner surface of a ladder placeable against the edge of a roof comprising, a frame having flat side walls and an upper and a lower cross-member secured to the outer edges of said walls, the members being shaped to engage any two adjacent rungs of the ladder firmly to maintain the frame in inwardly projected position on the ladder, a grooved wheel rigidly seated for rotation within the inwardly projecting side walls of the frame, and a hand grip inwardly projecting from the walls of the frame for manually moving the ladder to adjust the angle of inclination thereof relative the edge of roof.

4. A hoisting device attachable to the inner surface of a ladder placeable against the edge of a roof comprising, a frame having flat side walls, flanges laterally extending from the outer edge of said walls, an upper and a lower cross-member secured to said flanges in vertically spaced relation to each other and shaped to engage any two adjacent rungs of the ladder firmly to maintain the side walls of the frame in inwardly projected position on the ladder, the lower cross-member being set a little closer to the upper member than the distance between adjacent rungs, a grooved wheel rigidly seated for rotation within the inwardly projecting walls of the frame, and a hand grip inwardly projecting from the side walls for manually moving the ladder to adjust the angle of inclination thereof relative the edge of roof.

5. A hoisting device for attachment to the inner surface of a ladder, said device consisting of a frame in the shape of an inverted U having a flat upper wall and flat side walls downwardly extending therefrom, flat flanges laterally extending from the outer edges of said side walls, a grooved wheel mounted for rotation within the walls of the frame, a hook-shaped cross-member fastened to said flanges at the top of the frame above said wheel to ride on a rung of the ladder, and a similar cross-member secured to the flanges at the bottom of the frame below the wheel in position to straddle the next lower rung of the ladder thereby to prevent oscillating movement of the frame on the ladder.

6. A hoisting device for attachment to the inner surface of a ladder mountable against the upper edge of a wall, said device consisting of a frame in the shape of an inverted U having a flat upper wall and flat side walls downwardly extending therefrom, flat flanges laterally extending from the outer edges of said side walls, a grooved wheel mounted for rotation within the side walls, a hook-shaped cross-member fastened to said flanges at the top of the frame above said wheel to ride on a rung of the ladder, a similar cross-member secured to the flanges at the bottom of the frame below the wheel in position to straddle the next lower rung of the ladder thereby to prevent oscillating movement of the frame on the ladder, and a handle inwardly projecting from the side walls of the frame for manually moving the ladder to adjust the angle of inclination thereof.

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The following references are of record in the file of this patent:

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