Sept. 22, 1953 H. L. CUTLER 2,652,937

WINDOW CHANGER

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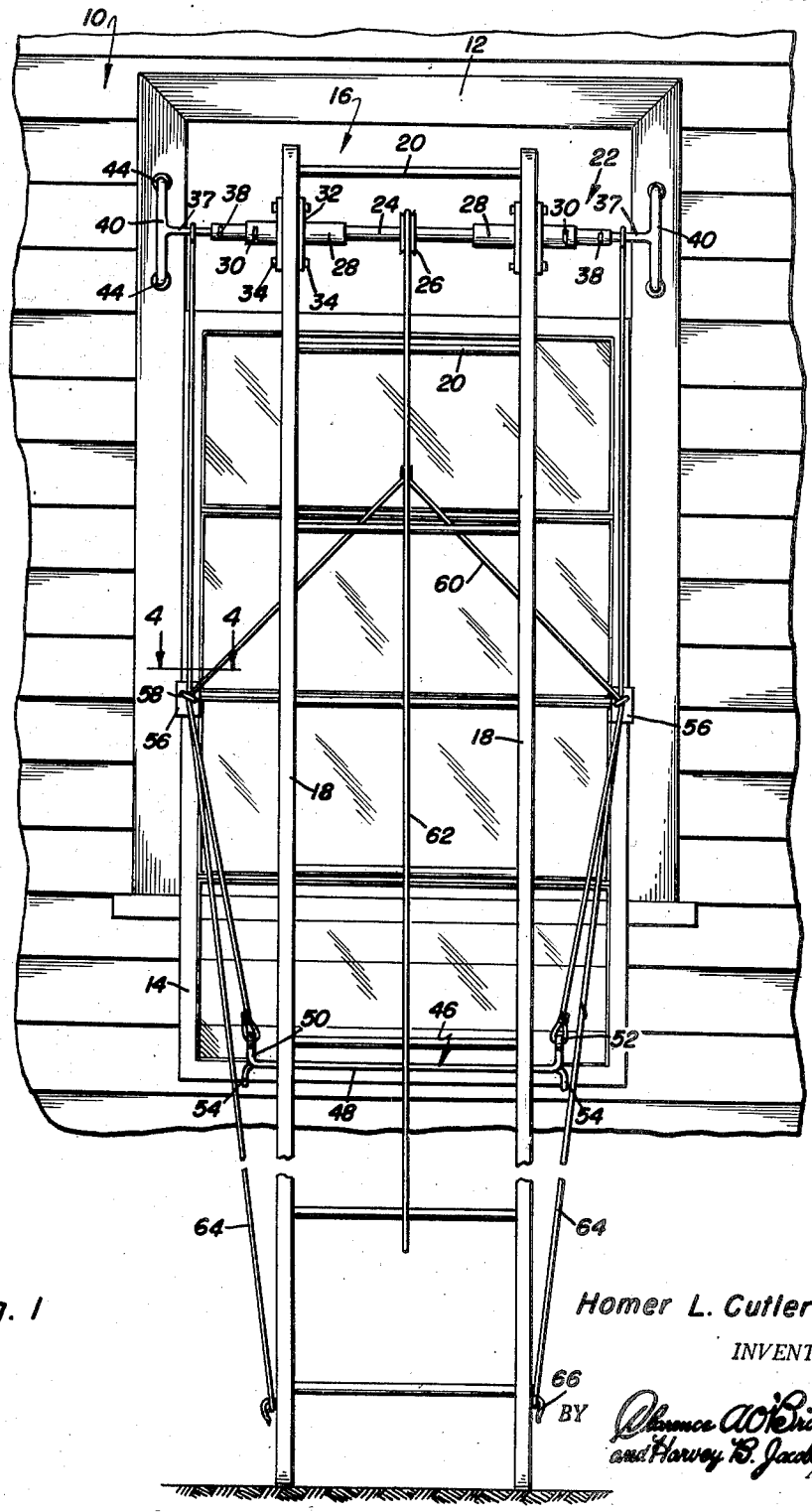


Fig. 1

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Fig. 2

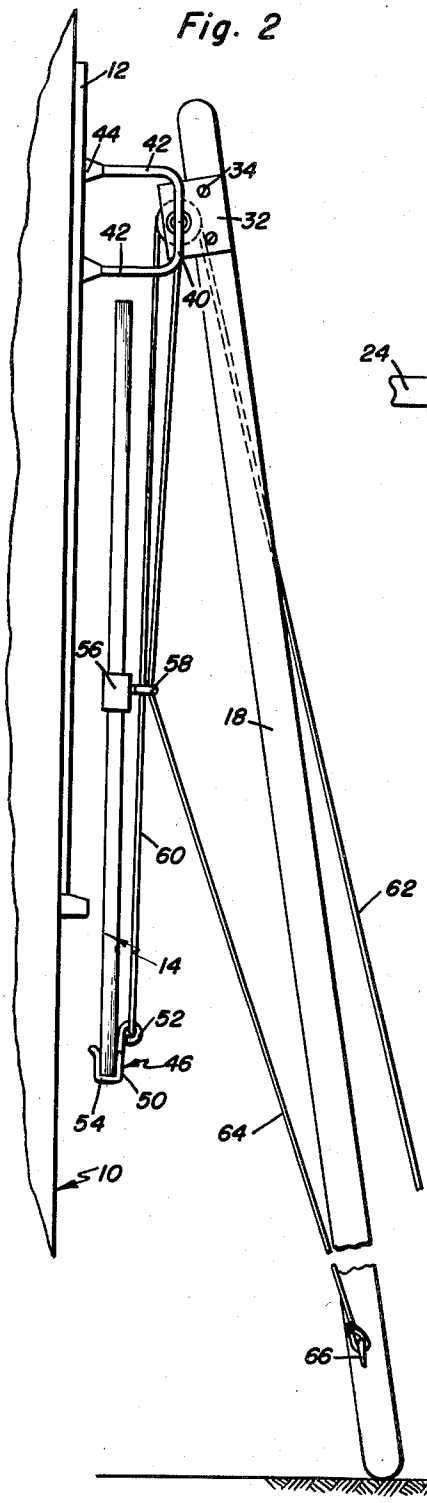


Fig. 3

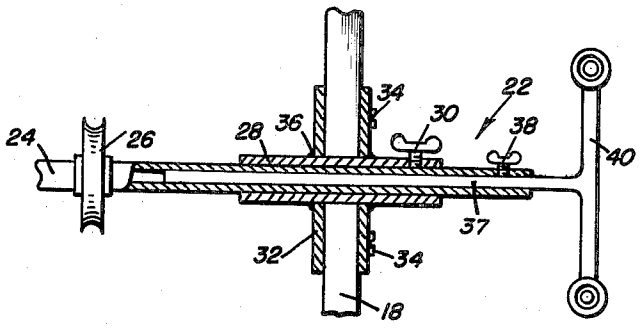


Fig. 4

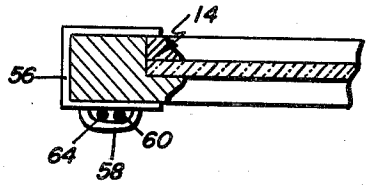
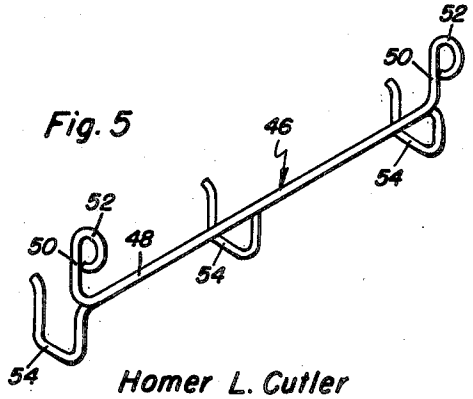


Fig. 5



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WINDOW CHANGER

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5 Claims. (Cl. 214—95)

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This invention comprises novel and useful improvements in a window changer and more specifically pertains to a portable ladder hoist attachment adapted for attachment to various conventional and varying sizes of ladders to adapt the same for use as a hoist for raising or lowering window sash, and other objects.

The principal object of this invention is to provide an attachment which may be readily applied to conventional existing ladders for adapting the same to function as a portable hoist, particularly for use with windows and in conjunction with vertical supporting surfaces in general.

A further important object of the invention is to provide a portable ladder hoist attachment by means of which the upper end of a ladder may be securely anchored to various supporting surfaces, particularly vertical surfaces and especially smooth vertical surfaces without marring or damaging the same and without danger of slippage of the ladder.

A still further important object of the invention is to provide a portable ladder hoist in conformity with the foregoing objects in which the attachment includes a support frame easily applied to remove from the side rails of a ladder, which support frame is capable of a convenient and easy lateral adjustment to accommodate itself to different sizes of ladders; and to adapt the support frame for use with different widths of supporting surfaces.

Yet another important object of the invention is to provide an improved portable ladder hoist as set forth in the foregoing objects in which an improved supporting means is provided for gripping and holding a window sash or similar object; and for conveniently raising or lowering the window sash.

And a final important object to be specifically enumerated herein, resides in the provision of a portable ladder hoist as set forth in the preceding objects in which a guide means is provided to facilitate the raising or lowering of window sash and the like by the device.

These, together with various ancillary features and objects of the invention, which will later become apparent as the following description proceeds, are attained by the present invention, a preferred embodiment of which has been illustrated, by way of example only, in the accompanying drawings, wherein:

Figure 1 is a fragmentary side elevational view showing a suitable embodiment of the apparatus incorporating therein the principles of

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this invention, the same being illustrated as applied to a window frame for raising or lowering a storm sash or the like, parts being broken away;

Figure 2 is a side elevational view of Figure 1;

Figure 3 is a fragmentary vertical sectional view showing certain structural details of the adjustable support frame forming an essential part of the invention;

Figure 4 is a horizontal sectional detail view taken substantially upon the plane indicated by the section line 4—4 of Figure 1 and illustrating a supporting clip for a window sash to be lifted by the device; and,

Figure 5 is a perspective view of a cradle for supporting the lower end of a window sash in accordance with this invention.

Referring now more specifically to the accompanying drawings, wherein like numerals designate similar parts throughout the various views, it will be seen that the numeral **10** designates any desired supporting surface such as the side of a building or the like with which it is desired to use the present device, the same including a window frame **12** in which it is desired to install a window sash, storm screen or the like as at **14**. It is to be of course understood that the device can be employed with other supporting surfaces and it is not limited to use with a wall **10**, nor is it limited to its application to a window frame, although the same is particularly efficacious for this purpose, and the device can be employed to lift other objects than window sash, storm sash or the like **14**, as for lifting buckets or other cleaning and scrubbing equipment, paint and similar objects if desired.

The portable ladder hoist whose specific structure forms the subject of this invention, comprises a substantially conventional form of ladder **16** of any known and desired character and of various sizes, lengths and materials as desired, the invention being equally applicable to the same, the ladder necessarily including a pair of side rails **18** having the customary ladder rungs **20** therebetween.

Detachably secured to the upper end of the side rails **18**, is a support frame indicated generally by the numeral **22** and which includes a support bar **24** which is preferably of a tubular construction and which has suitably secured thereto in any desired manner a rotatable pulley **26**. The tubular support bar **24** has its ends slidably received in tubular sleeve members **28**, and suitable set screws **30** are provided in the sleeve members for fixedly securing the same to the

ends of the support bar 24 in adjusted position.

A pair of brackets 32, which may be conveniently formed of sheet metal or the like and of a U-shaped construction are provided, each of these brackets removably embracing a side rail 18 of the ladder, the brackets being adjustably and releasably clamped thereto as by set screws 34. As shown more clearly in Figure 2, the brackets extend laterally from the side rails to thus provide offset supporting plates through which extend the above mentioned sleeves 28 which are welded or otherwise rigidly attached to these plates as at 36, see Figure 3.

As so far described, it will be apparent that by loosening the set screws 30, and the set screws 34, the sleeves 28 may be adjusted to or from each other as required in order that the brackets 32 may be embraceably applied to or may be removed from the side rails 18 at any desired position along the length of the same, whereupon the set screws 34 may be clamped to securely and firmly but removably attach the brackets to the side rails of the ladder. When the support bar 24 has been properly positioned in the supporting sleeves 28, the set screws 30 may be clamped thereby locking the support bar rigidly in position and further bracing the support frame upon the ladder. Preferably, although not necessarily, the pulley 26 will be supported substantially midway between the two side rails 18 of the ladder, although it will be apparent that this position can be varied as expediency dictates.

The support frame further includes support means by which the support frame may be attached to the supporting surface 10 or 12 in an improved manner. This support means comprises a pair of shafts 37 which are slidably received in the ends of the support bar 24 and are longitudinally adjustable therein and may be locked in adjusted position as by a set screw 38 at each end of the support bar.

At their outer ends, the shafts 37 are provided with U-shaped legs comprising a lateral member 40 which is integrally secured at its mid-point to the end of the shaft 37, and constitutes the web or mid portion of the U-shaped legs, the ends of the member 40 having parallel legs 42 which are provided with suction cups or the like 44.

As will be apparent from Figure 1, the support means can be readily adjusted in order to position the U-shaped legs for engagement upon the window frame 12 or any other particular portion of the supporting surface, whereupon the suction cups will securely attach the support frame to the supporting surface without danger of marring the finish of the same.

Referring now more specifically to Figures 4 and 5, it will be seen that the device further includes means for supporting a window frame or sash in order that the same may be raised or lowered as desired. This support means includes a cradle indicated generally by the numeral 46, this cradle comprising a horizontally extending bar 48 of any suitable material and which is preferably disposed in parallelism with the lower edge of the window sash 14 to be handled by the device, the ends of this bar having upturned portions 50 which terminate in lifting eyes or hooks 52. At its ends, and at any other convenient locations as intermediate its ends, the bar 40 is provided with depending U-shaped hooks 54 which are adapted to embrace and receive the lower edge of the window sash 14, as will be readily apparent from Figures 1 and 2.

A pair of U-shaped clips 56 which if desired may be of a resilient nature, are provided for embracing the side edges of the window sash 14, these clips having eye members 58 disposed in the angular relation shown in Figure 1. A supporting sling, preferably in the form of a cable or the like 60 is provided which is threaded through the eyes 58 and has its extremities anchored to the hook portions 52 of the cradle 46, the mid portion of the sling, constituting the upper end of the same, being suitably connected to the end of a hoisting cable 62 which is entrained over the pulley 26. As will now be apparent, by means of the cradle, the clips and the sling, the window sash or storm sash 14 may be readily raised or lowered by the device without danger of dropping the same.

However in order to further facilitate the handling of the usually unwieldy storm windows and the like, especially in windy weather, a guide means is provided consisting of a pair of cables 64 whose upper ends are attached to the shaft 37, which extend through the eyes 58 as shown in Figures 2 and 4, and its lower ends are attached to suitable hooks 66 upon the side rails 18. It will now be apparent that twisting or free swinging movement of the member 14 is prevented as the same is raised or lowered by the ladder hoist hereinbefore described.

From the foregoing, the construction and operation of the device together with its many advantages will be readily apparent and further explanation is believed to be unnecessary. However, since numerous modifications and changes will readily occur to those skilled in the art after a consideration of the foregoing specification and accompanying drawings, it is not desired to limit the invention to the exact construction shown and described, but all suitable modifications and equivalents may be resorted to, falling within the scope of the appended claims.

Having thus disclosed and described the invention, what is claimed as new is as follows:

1. A portable ladder hoist comprising a support frame for attaching the upper end of a ladder to a vertical support surface, a cradle for supporting the lower edge of a window sash or the like for raising the same, a sling connected to said cradle, lifting means connected to said sling and to said support frame, said support frame having brackets each detachably secured to the side rail of a ladder, sleeves carried by said brackets, a support rod slidably received in said sleeve, support means slidably mounted on said support rod.

2. A portable ladder hoist comprising a support frame for attaching the upper end of a ladder to a vertical support surface, a cradle for supporting the lower edge of a window sash or the like for raising the same, a sling connected to said cradle, lifting means connected to said sling and to said support frame, said support frame having brackets each detachably secured to the side rail of a ladder, sleeves carried by said brackets, a support rod slidably received in said sleeves, support means slidably mounted on said support rod, said means comprising a shaft telescopingly received in said support rod, U-shaped legs on said shaft.

3. A portable ladder hoist comprising a support frame for attaching the upper end of a ladder to a vertical support surface, a cradle for supporting the lower edge of a window sash or the like for raising the same, a sling connected to said cradle, lifting means connected to said sling and to said support frame, U-

shaped clips for embracing the side edges of a window sash, eyes on said clips, said sling being slidably received through said eyes, guide means connected to said support frame and to the ladder and slidable through said eyes.

4. A portable ladder hoist comprising a support frame for attaching the upper end of a ladder to a vertical support surface, a cradle for supporting the lower edge of a window sash or the like for raising the same, a sling connected to said cradle, lifting means connected to said sling and to said support frame, U-shaped clips for embracing the side edges of a window sash, eyes on said clips, said sling being slidably received through said eyes, said support frame having brackets each detachably secured to the side rail of a ladder, sleeves carried by said brackets, a support rod slidably received in said sleeves, support means slidably mounted on said support rod.

5. An attachment for raising window sashes or the like comprising a cradle for supporting the lower edge of a window sash or the like for raising the same, a sling connected to said cradle and to a lifting means, said cradle comprising a longitudinal horizontal bar adapted for disposal in parallelism with the lower edge of a window sash, lifting hooks at the ends of said bar engaged by said sling, U-shaped hooks depending from said bar for embracingly supporting the lower edge of a window sash, U-shaped clips for embracing the side edges of a window sash, eyes on said clips, and said sling being slidably received through said eyes.

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