March 11, 1952 A. D. ALLPHIN ET AL 2,588,458

PORTABLE CONSTRUCTION HOIST

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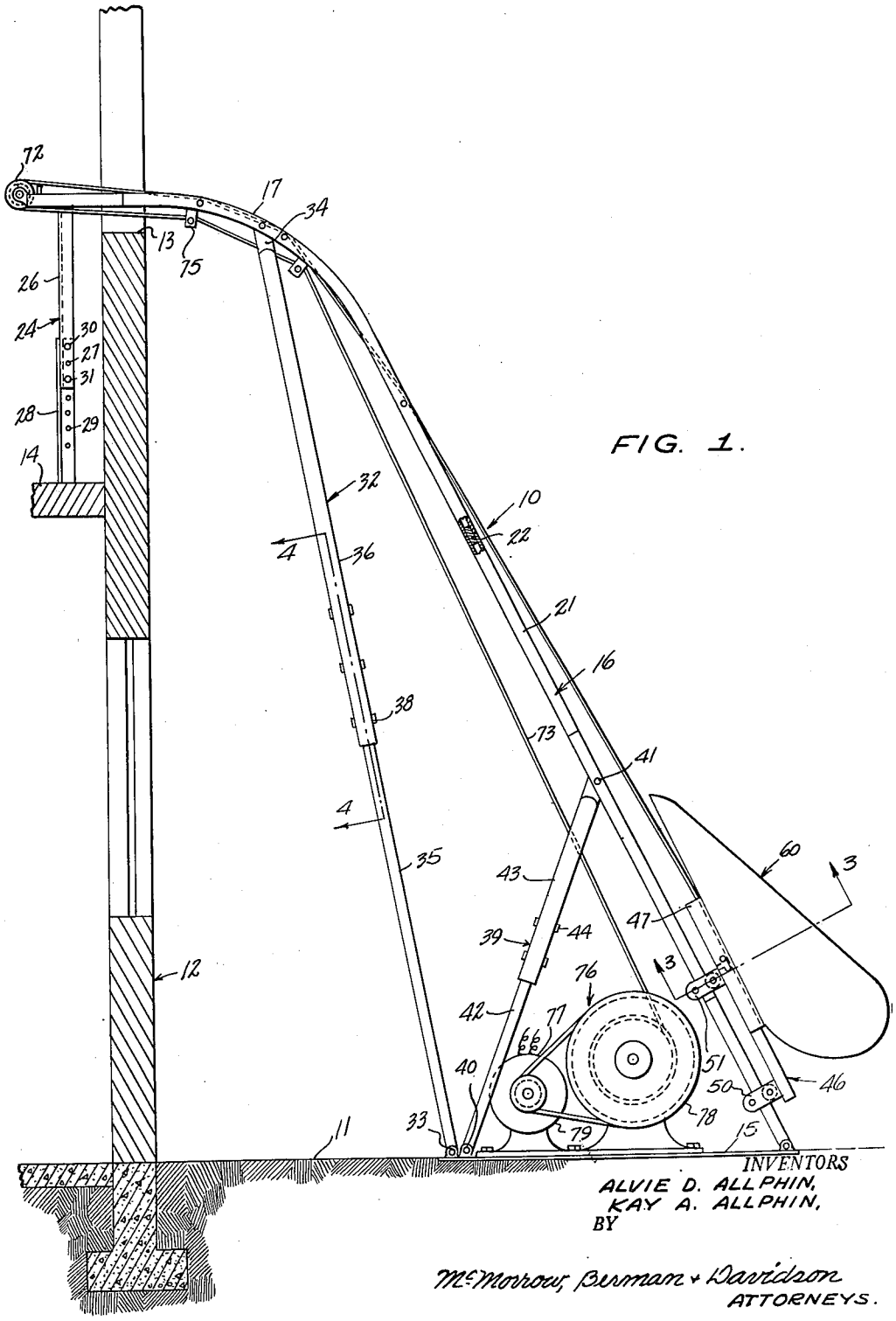



FIG. 1.

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FIG. 2.

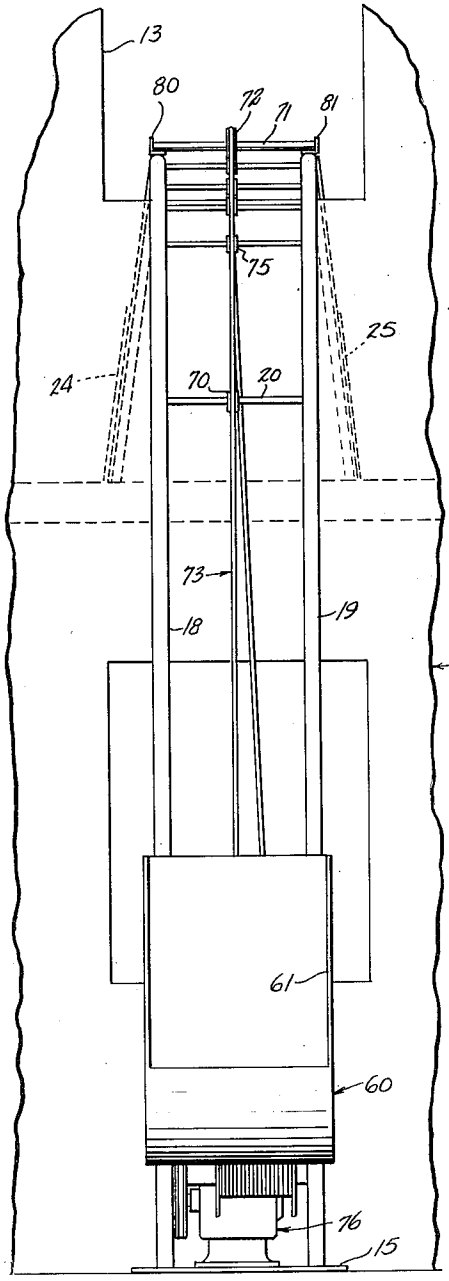



FIG. 3.

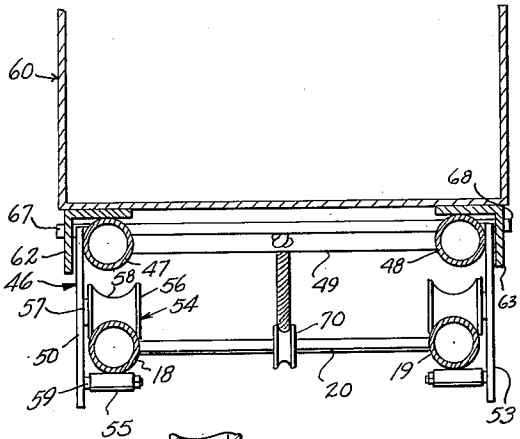
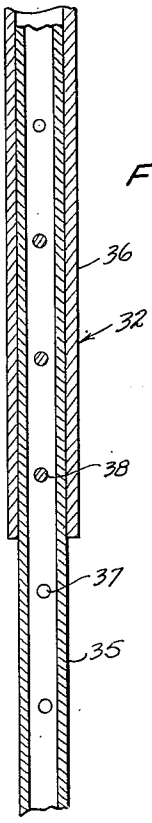



FIG. 4.




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FIG. 5.

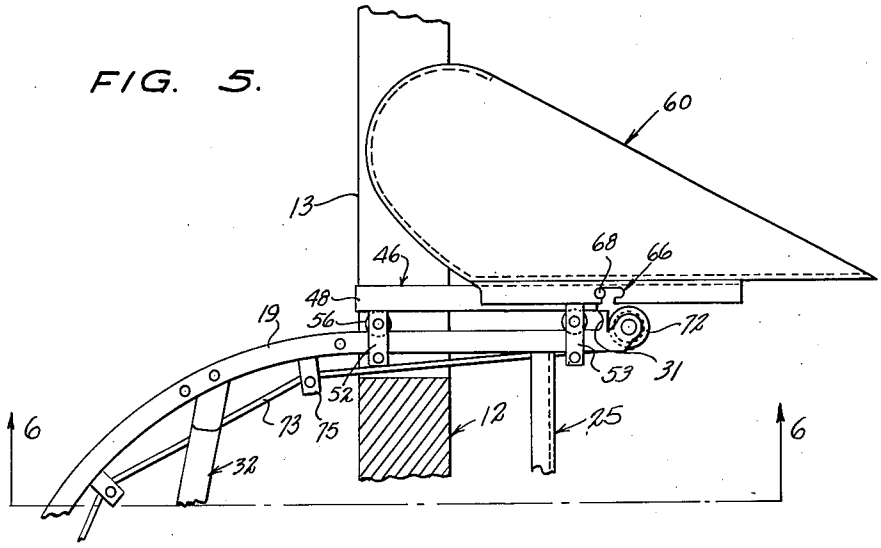
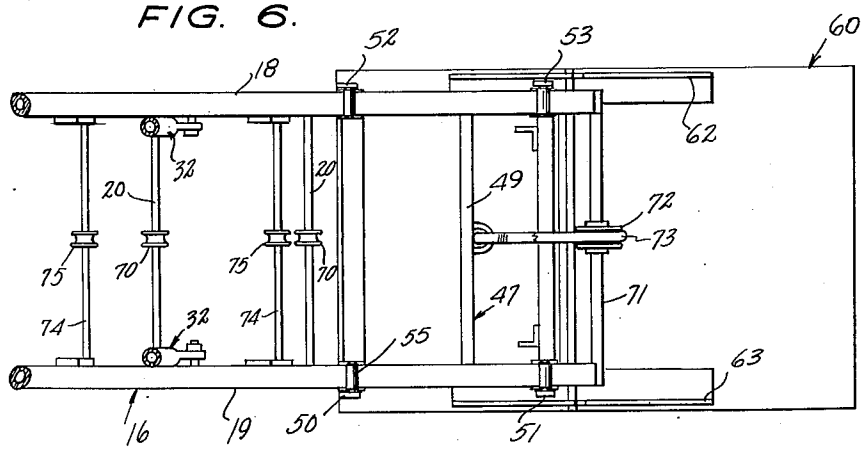



FIG. 6.



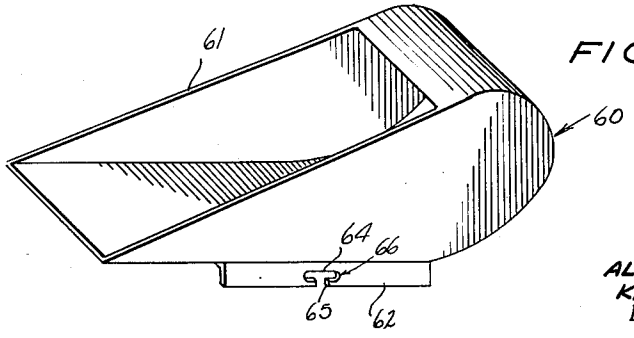




FIG. 7.

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# UNITED STATES PATENT OFFICE

2,588,458

## PORTABLE CONSTRUCTION HOIST

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Application October 6, 1950, Serial No. 188,807

2 Claims. (Cl. 214—100)

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This invention relates to hoisting mechanisms, and more particularly to a portable construction hoist.

An object of this invention is to provide a portable construction hoist which is particularly adapted for adjustment to various heights, whereby the upper end thereof can be extended through any window opening in a structure for support on the floor adjacent said window opening.

Another object of this invention is to provide a portable hoist including a bucket which is particularly adapted to be supported on a track for movement therealong in a safe and simple manner.

A further object of this invention is to provide a portable hoist including a bucket which is detachably secured to a mobile chassis, whereby the bucket can be easily removed for cleaning, dumping or storage.

A still further object of this invention is to provide a portable construction hoist which is relatively simple in structure, easy to assemble and disassemble, and cheap to manufacture.

The above and still further objects and advantages of the invention will become apparent upon consideration of the following detailed description of the invention, when taken in conjunction with the accompanying drawings, wherein:

Figure 1 is a side elevational view of the portable construction hoist of the present invention, shown with its lower end supported on a ground surface contiguous to and spaced from a structure, and its upper end extending through a window opening in the structure and supported on an adjacent floor surface;

Figure 2 is a front elevational view of the construction hoist of the present invention, taken from the right of Figure 1;

Figure 3 is an enlarged sectional view taken along the line 3—3 of Figure 1;

Figure 4 is an enlarged fragmentary sectional view taken along the line 4—4 of Figure 1;

Figure 5 is an enlarged fragmentary side elevational view showing the bucket of the hoist in its uppermost position contiguous to the window opening of the building structure;

Figure 6 is a fragmentary elevational view taken along the line 6—6 of Figure 5; and

Figure 7 is a perspective view of the bucket forming a part of the construction hoist of the present invention.

Referring now more particularly to the drawings, wherein like reference numerals have been used throughout the several views to designate

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like parts, there is shown the construction hoist of the present invention, generally designated by the reference numeral 10, which is supported on a ground surface 11 contiguous to a building structure 12 having a window opening 13 spaced above the ground surface 11 and an adjacent floor surface 14 spaced below the window opening 13 and above the ground surface 11.

The hoist 10 embodies a base 15 adapted to rest on the ground surface 11 at a point spaced from the building structure 12. Arranged at an angle with respect to the base 15 is an upwardly extending track 16 which has its lower end connected to the base 15 and has its upper end bent arcuately inwardly, as indicated by the reference numeral 17, for extension through the window opening 13 to a point spaced inwardly thereof. The track 16 includes a pair of spaced tubular members 18 and 19 which are interconnected contiguous to the arcuately bent end 17 by means of the crossbars 20 which extend between the tubular members 18 and 19 and are secured therebetween. As clearly shown in Figure 1, the straight course of the track 16 intermediate the lower end thereof and the arcuately bent end 17 embodies individual, tubular sections 21 which are disposed in end-to-end confronting relation with respect to each other, the confronting ends being detachably secured together by means of a lug 22 carried by one of the confronting ends and embracingly received and supported within the confronting end of the adjacent one of the tubular sections 21. Accordingly, the hoist 10 is adapted for adjustment to various heights, whereby the arcuately bent upper end thereof can be extended through any window opening in the building structure 12.

Dependingly carried by the arcuately bent end 17 of the track 16 are the supporting brackets 24 and 25 which are engageable with the adjacent floor surface 14 of the building structure 12 for supporting the inwardly bent end 17 of the track within the window opening 13. Since each of the supporting brackets 24 and 25 is of like structure, it will suffice to describe only one in detail. The supporting bracket 24 embodies a first angle bar 26 which has one end fixedly secured to the adjacent section of the track 16, the other end being provided with a plurality of longitudinally spaced apertures 27. A second angle bar 28 is disposed in end-to-end aligned relation with respect to the angle bar 26 and is likewise provided with a plurality of longitudinally spaced apertures 29 which are selectively alignable with the apertures 27 of the angle bar 26. Extending through the alignable apertures 27 and 29 of the

sections 26 and 28 are the bolts 30 and 31 for detachably securing these sections in a select position of their adjustment with respect to each other. Accordingly, the supporting bracket 24 can be adjusted for engagement with the floor surface 14 at different levels with respect to the window opening 13.

Extending between the base 15 and the track 16 is an adjustable brace 32 which has one end pivotally connected to the base 15, as indicated by the reference numeral 33, or the end of the base remote from the supported end of the track 16. The other end of the adjustable brace 32 is pivotally connected to the track, as indicated by the reference numeral 34, at a point spaced downwardly from the upper end of the track 16. The adjustable brace 32 embodies a pair of tubular sections 35 and 36, the tubular section 35 having one end telescopically received and supported within the adjacent end of the tubular section 36. The telescoped ends of the sections 35 and 36 are provided with longitudinally spaced apertures, generally designated by the reference numeral 37, the apertures of the sections being selectively alignable with respect to each other in select positions of the adjustment of the sections. Extending transversely through the alignable apertures of the sections 35 and 36 are the bolts or pins 38, for detachably securing the sections in a select position of their adjustment with respect to each other.

Extending between the base 15 and the track 16 is an auxiliary brace 39 which has one end connected to the base, as indicated by the reference numeral 40, at a point contiguous to the pivotally connected end 33 of the brace 32 and has the other end connected to the track 16 at a point adjacent to and spaced forwardly from the lower end of the track, the connection being designated by the reference numeral 41. The auxiliary brace 39 is adjustable in length and is of a similar structure to the adjustable brace 32, the brace 39 embodying the telescoped sections 42 and 43 interconnected by the pins 44 which extend through selectively alignable apertures provided in the sections 42 and 43.

Positioned on the track 16 is a mobile chassis 46 which is mounted on the track for movement longitudinally thereof. The mobile chassis 46 embodies spaced tubular side members 47 and 48, Figure 3, which are interconnected by a cross brace 49. Dependingly carried contiguous to each end of the side member 47 are the ears 50 and 51. Similarly, ears 52 and 53 are dependingly secured to the ends of the side member 48. Suitable mounting means, generally designated by the reference numeral 54 are carried by each of the depending ears 50 to 53, inclusive, and engage the adjacent members 18 and 19, to thereby mount the chassis 46 for movement along the track. Since each of the mounting means 54 is the same, it will suffice to describe only one in detail. As clearly shown in Figure 3, the mounting means 54 embodies a pair of spaced rollers 55 and 56 engaging opposed peripheral portions of the tubular flat member 18 and rotatably journaled on the ear 50. The roller 56 is rotatably journaled on a stub shaft 57 and is provided with a concave bearing surface 58 intermediate its ends adapted to engage a substantial peripheral portion of the tubular rail member 18. The roller 55 is likewise journaled on a stub shaft 59, but only engages the rail member 18 at a single point along the periphery thereof.



Resting upon the chassis 46 is a bucket 60, Figure 7, which is detachably secured to the chassis with the open end 61 thereof facing upwardly. The bucket 60 includes a pair of depending side flanges 62 and 63, each flange being provided with an elongated slot 64 extending longitudinally thereof substantially midway between the ends thereof and spaced inwardly from the free lower side edge thereof. A portion of the flange 62 intermediate the ends of the slot 64 is cut away, as indicated by the reference numeral 65, to thereby form the bayonet slot 66. Projecting outwardly from the side members 47 and 48 of the chassis 46 are the supporting lugs 67 and 68 which are engageable with the bayonet slots 66 of the side flanges 62 and 63, to thereby detachably secure the bucket 60 on the mobile chassis 46.

Rotatably journaled on the track 16 at spaced intervals therealong are a plurality of longitudinally aligned guide pulleys, generally designated by the reference numeral 70. As clearly shown in Figures 2 and 6, the guide pulleys 70 are journaled substantially midway between the ends of the brace bars 20 for rotary movement about the brace bars as pivotal axes.

Disposed transversely of the upper end of the track 16 is a pulley support 71 which has its ends fixedly secured to the rails 18 and 19 of the track 16. Rotatably journaled intermediate the ends of the support rod is the encased pulley 72 which is disposed in alignment with respect to the guide pulleys 70. A steel cable 73 is positioned intermediate the tubular members 18 and 19 of the track 16 and has an intermediate portion trained upwardly over the guide pulleys 70 and the encased pulley 72, the cable having one end fixedly secured to the cross bar 49 of the chassis 46 and having the other end extending beneath the track 16 toward the base 15. Dependingly supported from the track 16 contiguous to and at spaced intervals along the upper end thereof are a plurality of support bars 74 which carry a plurality of longitudinally aligned guide pulleys 75 for the extension therethrough of the free end of the steel cable 73. As shown in Figures 2 and 6, the guide pulleys 75 are journaled substantially midway between the ends of the support bars 74 for rotary movement about the bars 74 as a pivotal axis.

Carried by the base 15 is an electrically operated hoist mechanism 76 to which the free end of the cable is operatively connected, the hoist mechanism being adapted to effect the movement of the assembly of the mobile chassis and the bucket along the track 16. The hoist mechanism includes an electric motor 77 which is coupled to a reel 78 by means of a belt 79. The hoist mechanism is provided with suitable braking and clutching means, not shown, whereby the intermittent actuation and braking of the chassis 46 can be effected.

Fixedly secured to the upper end of each of the rail members 18 and 19 at a point spaced inwardly from the pulley support 71 are the stop elements 80 and 81 which preclude the withdrawal of the chassis from the upper end of the track 16.

From the foregoing, the operation of the portable construction hoist of the present invention is readily apparent. The hoist can be selectively adjusted to various heights, whereby the upper arcuately bent end 17 of the track 16 can be extended through any window opening in a building structure. The bucket 60 can be disengaged from

its supported position on the mobile chassis **46** by merely withdrawing the lugs **67** and **68** from their supported positions within the bayonet slots **66** provided in the side flanges **62** and **63** of the bucket **60**.

Although only one embodiment of the portable construction hoist of the present invention has been described, it is readily apparent that numerous modifications can be made without departing from the spirit of the invention as set forth in the appended claims.

What we claim is:

1. A portable construction hoist for a building including a window opening spaced above a ground surface and a floor surface within said building and adjacent said window opening, said hoist comprising a base adapted to rest on said ground surface at a point spaced from said building, an upwardly extending track arranged at an angle with respect to said base and having its lower end hingedly connected contiguous to one end of said base, the portion of the track adjacent the upper end thereof being bent arcuately to thereby dispose the upper end at an angle with respect to the track for extension of said other end through said window opening, a first adjustable brace means dependingly carried by said track contiguous to said upper end and adapted to engage said floor surface for supporting said upper end of said track when extended through said window opening, a second brace means having one end hingedly connected to said base contiguous to the other end thereof and having its other end hingedly connected to said track adjacent to and spaced from the lower end thereof, a third brace means having one end hingedly connected to said base adjacent said other end thereof and having its other end hingedly connected to the arcuate portion of said track, a bucket mounted on said track for reciprocatory movement, and hoist means operatively connected to said bucket for effecting the movement of said bucket along said track.

2. A portable construction hoist for a building including a window opening spaced above a ground surface and a floor surface within said building and adjacent said window opening, said hoist comprising a base adapted to rest on said ground surface at a point spaced from said building, an upwardly extending track arranged at an angle with respect to said base and having its lower end hingedly connected contiguous to one end of said base, the portion of the track adjacent the upper end thereof being bent arcuately to thereby dispose the upper end at an angle with respect to the track for extension of said other end through said window opening, a first adjustable brace means dependingly carried by said track contiguous to said upper end and adapted to engage said floor surface for supporting said upper end of said track when extended through said window opening, a second brace means having one end hingedly connected to said base contiguous to the other end thereof and having its other end hingedly connected to said track adjacent to and spaced from the lower end thereof, a third brace means having one end hingedly connected to said base adjacent said other end thereof and having its other end hingedly connected to the arcuate portion of said track, a mobile chassis positioned on said track, mounting means dependingly carried by said chassis and embracingly engageable with said track for securing said chassis to said track, an upwardly opening bucket supported on said chassis and detachably secured thereto, a plurality of longitudinally aligned pulleys rotatably supported on said track at spaced intervals therealong, a cable having one end fixedly secured to said chassis and having an intermediate portion trained upwardly over said pulleys, and hoist means carried by said base and operatively connected to the other end of said cable for effecting the movement of the chassis along said track.

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