Jan. 24, 1956 A. T. SMITH ET AL 2,732,264

LADDER STAGE

Filed March 20, 1953 2 Sheets-Sheet 1

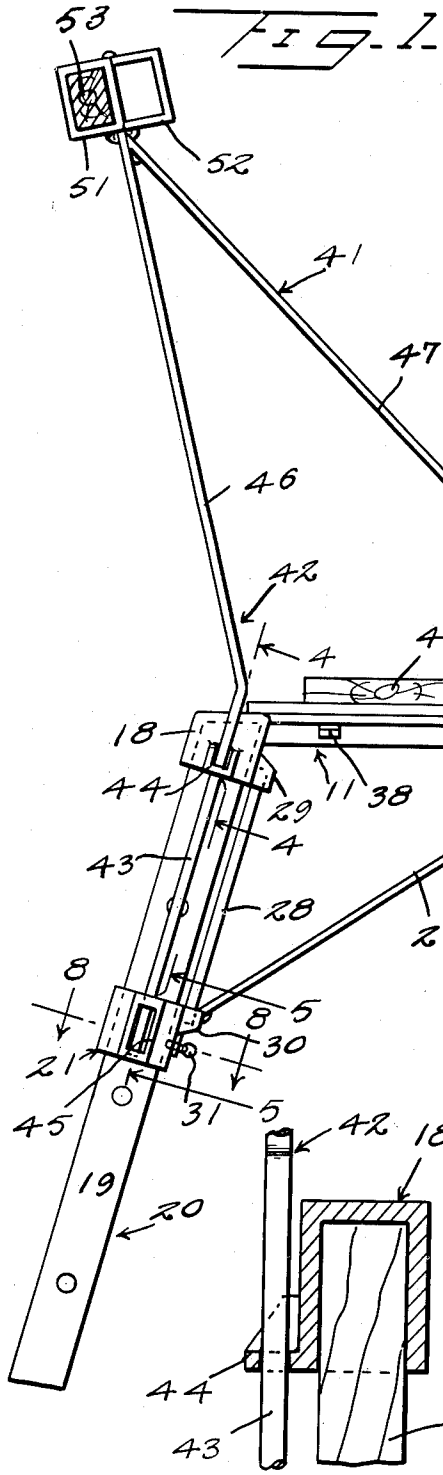


FIG. 1.

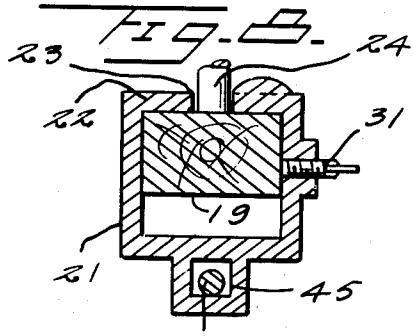


FIG. 2.

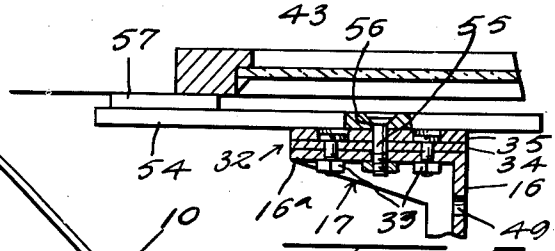


FIG. 3.

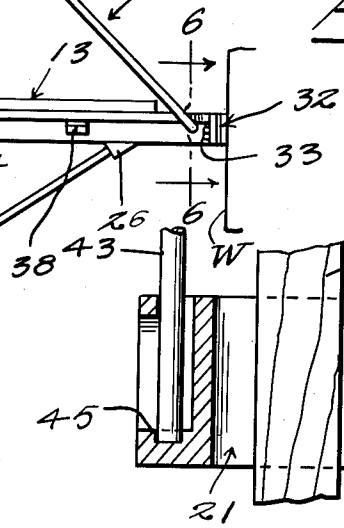


FIG. 5.

FIG. 4.

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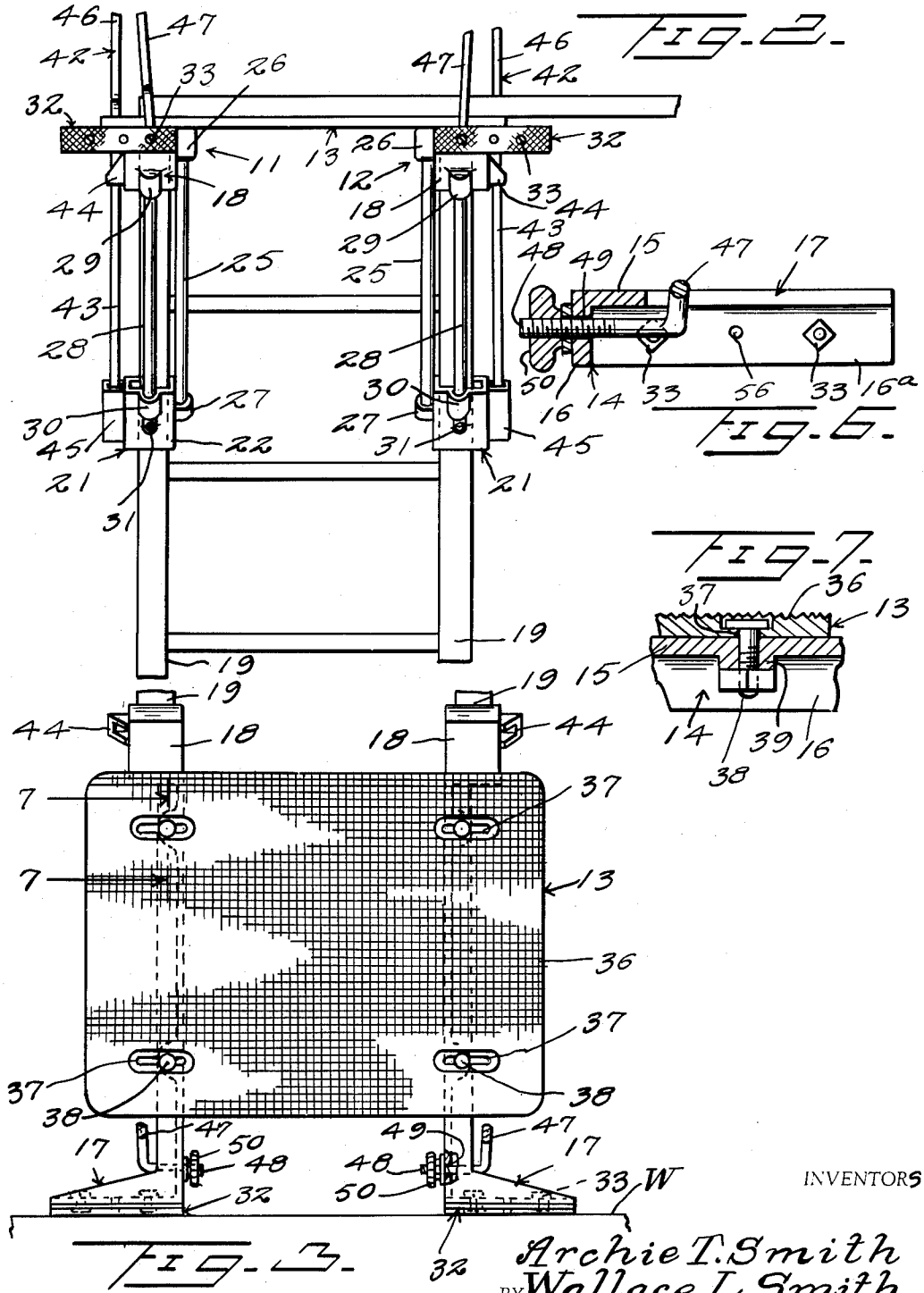


FIG. 2.

FIG. 6.

FIG. 7.

FIG. 3.

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LADDER STAGE

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5 Claims. (Cl. 304—10)

This invention relates to a novel ladder stage or ladder jack which is primarily adapted for use in the building and construction trades and which is adapted to be demountably supported on the upper end of a ladder.

Another object of the invention is to provide a ladder stage or ladder jack capable of replacing, for many purposes, conventional swing stages, scaffoldings and ladder jacks, and which is supported primarily by the side rails or stiles of a ladder without bearing on the ladder rungs and to a lesser extent by an upright surface such as a wall against which the ladder jack or stage bears.

A further object of the invention is to provide a ladder jack or stage which is extremely light in weight yet durable in construction, which can be quickly and easily applied to or removed from a ladder and which is capable of being readily adjusted for fitting ladders of different widths.

Other objects and advantages of the invention will hereinafter become more fully apparent from the following description of the drawings, illustrating a presently preferred embodiment thereof, and wherein:

Figure 1 is a side elevational view of the ladder jack or stage in an operative position;

Figure 2 is a front elevational view thereof;

Figure 3 is a top plan view with certain of the parts omitted;

Figures 4 and 5 are enlarged sectional views taken substantially along planes as indicated by the lines 4—4 and 5—5, respectively, of Figure 1;

Figure 6 is an enlarged cross sectional view taken substantially along a plane as indicated by the line 6—6 of Figure 1;

Figure 7 is an enlarged fragmentary vertical sectional view taken substantially along a plane as indicated by the line 7—7 of Figure 3;

Figure 8 is an enlarged cross sectional view taken substantially along a plane as indicated by the line 8—8 of Figure 1, and

Figure 9 is a fragmentary horizontal sectional view partly in bottom plan illustrating a portion of the ladder jack.

Referring more specifically to the drawings, the ladder jack in its entirety is designated generally 10 and includes a pair of corresponding ladder stiles or side rail engaging brackets 11 and 12 and a platform or stage 13 which is supported thereby.

The brackets 11 and 12 each include a platform supporting arm 14 of angular cross section having a horizontal top portion 15 and a depending vertical flange 16 which depends from the inner edge of the top portion 15. The arms 14 have outturned terminal portions forming foot members 17, each of which includes an outer depending flange 16*a*. Each arm 14 at its opposite inner end is provided with a depending downwardly opening socket 18 the axis of which is disposed at an obtuse angle to the axis of the arm 14. The socket members 18 of the brackets 11 and 12 fit over the upper ends of the stiles or side rails 19 of a conventional ladder 20.

Each of the brackets 11 and 12 includes a lower ladder stile engaging member 21 of sleeve-like construction except that an inner wall 22 thereof is provided with a slot 23 extending from top to bottom thereof through which the rungs 24 of the ladder 20 pass in applying the members 21 to and removing them from the ladder stiles.

Each bracket 11 and 12 is provided with a diagonal brace rod 25 the upper end of which is secured to a socket 26 that is fixed to the arm 14 near its outer end, and the lower end of which is secured in a socket 27 which is fixed to the inner side of the stile engaging member 21. A second brace rod 28 is provided for each bracket and has its upper end secured in a socket 29 which is fixed to the inner side of the socket 18 and its lower end secured in a socket 30 which is fixed to the inner side of the member 21.

The stile engaging members 21 have set screws 31 threaded inwardly through the inner walls thereof which are tightened against the ladder stiles 19 for adjustably securing said members 21 thereto.

A bumper 32 is secured to the outer side of the flange 16*a* of each foot member 17 by two or more nut or bolt fastenings 33. Each bumper 32 includes an inner ply 34 of hard rubber or the like and an outer ply 35 of softer rubber, the outer face of which is roughened, as illustrated in Figure 9. The bolts of the fastenings 33 extend through the inner ply 34 and flange 16*a* and the bolt heads are countersunk in the outer ply 35.

The plate 13 forming the ladder jack platform or stage preferably constitutes a relatively strong casting having a ribbed or roughened top surface 36. The platform 13 extends lengthwise across and rests on the flanges 15 of the arms 14 and is of a width nearly equal to the length of said arms. The platform 13 is provided adjacent each end thereof with longitudinally elongated slots or openings 37 to loosely receive the shanks of nut and bolt fastenings 38 which extend therethrough and through flanged openings 39 of the flanges 15. The heads of the bolts 38 are countersunk in the platform 36 and said bolts slidably engage the slots 37 to permit sufficient adjustment of the brackets 11 and 12 toward and away from one another to accommodate ladders of substantially all widths.

From the foregoing it will be readily apparent that the assembled brackets 11 and 12 may be applied to the upper portions of the ladder stiles 19, as illustrated in the drawings, and secured thereto by merely tightening the fastenings 31. Actually, the brackets 11 and 12 may be utilized without the fastenings 31 which are merely provided as an additional safety factor. The brackets 11 and 12 are then secured together by connecting the platform or stage 13 to the bracket arms 14 by applying and tightening the fastenings 38, the slots 37 being of sufficient length to compensate for the different spacing of the brackets due to variations in width of the ladder or lateral spacing of the ladder stiles 19. The ladder 20 is then positioned in an upwardly and inwardly inclined position relatively to an upright member such as a wall W and with the arms 14 extending from the upper end of the ladder 20 toward said wall so that said arms will be in substantially a horizontal position when the rubber bumpers 32 are disposed to rest against the upright member W. A workman may then stand on the stage or platform 13 for accomplishing any work on the wall W above the level of the arms 14, as for example painting, sheathing or the like. Obviously, by utilizing ladders 20 of different lengths with the ladder jack or stage 10, the required work may be performed from top to bottom of an upright member W having a height of thirty feet or even higher. Of course, the work is performed near the bottom of the member W without the use of the ladder and ladder jack, where the operator can stand on the ground and reach to a required height.

Where desired, a plurality of the ladder jacks or ladder stages 10 may be employed on a corresponding number of ladders of corresponding lengths and by merely supporting scaffolding planks 40 on the platforms 13 a scaffolding is provided on which a number of men may work.

Where three or more ladder jacks are thus utilized, the platforms of the intermediate ladder jacks have the ends of the scaffold planks **40** each extending inwardly to points approximately intermediate of the ends of said platforms.

As an additional precautionary measure, the ladder jack **10** may be provided with a back railing. The back railing includes a railing frame section **41** which is detachably supported by each bracket **11** and **12** and which includes a rear supporting rod or post **42** having a straight lower portion **43** extending slidably through a guide eye **44** fixed to the outer side of the bracket socket **18** and a lower end which seats in a supporting socket **45**, disposed on the outer side of and forming a part of the stile engaging member **21**. The rod or post **42** has an upper portion **46** extending upwardly and outwardly from above the ladder bracket at an obtuse angle to the lower portion **43**, which portion **46** merges at its upper end and is secured to the upper end of a brace rod **47**. The brace rod **47** extends downwardly and inwardly from the upper end of the rod **42** and is provided at its opposite end with an inturned threaded terminal **48** which extends inwardly through an opening **49** in the flange **16** between the foot member **17** and the edge of the platform **13**, which is disposed adjacent thereto. Said rod end **48** is secured to the arm **14** by a nut **50**. A pair of sleeve members **51** and **52** are disposed in side by side relationship and are secured to one another and to the merging upper ends of the parts **46** and **47**. A rail member **53** is normally disposed with its ends extending through and supported in the two sleeve members **51** which are supported by the brackets **11** and **12** to complete the safety railing **41** behind and on either side of a workman standing on the platform **13**.

Where a plurality of ladder jacks or ladder stages are utilized as previously described with the planks **40**, the rail **53** may extend laterally of the sleeves **51** of an intermediate ladder jack in one direction and a second rail, not shown, may be supported at one end in the sleeves **52** of the intermediate ladder jack and extend in the opposite direction.

Where it is necessary to locate a ladder jack or stage **10** in front of a window or door opening, as illustrated in Figure 9, a bar **54** of a length substantially greater than the spacing of the foot members **17** is disposed across said foot members and bears against the outer sides of the cushioning portions **35**. Said bar is secured to the foot members **17** by nut and bolt fastenings **55** which extend through aligned openings **56** in said bar, the cushioning members **32** and the flanges **16***a*. The ends of the bar **54** may then rest against side portions of the frame **57** of the window or door opening.

It will be noted that the entire weight of the ladder jack or ladder stage **10** is supported by the ladder stiles **19** primarily and to a limited extent by the upright member W.

The ladder jack or stage **10**, with the exception of the bumper members **32**, is intended to be formed primarily of lightweight but strong metal such as aluminum or magnesium and it will thus be apparent that the ladder stages or jacks may be readily applied and erected or taken down by one man, or two men where employed to form a scaffold with a plank or planks **40**.

Various modifications and changes are contemplated and may obviously be resorted to, without departing from the spirit or scope of the invention as hereinafter defined by the appended claims.

We claim as our invention:

1. A ladder stage comprising a pair of ladder brackets each including an arm having an inner end provided with a downwardly opening socket and an outer end forming a foot member, said sockets of the ladder brackets being adapted to receive the upper ends of the stiles or side rails of a ladder for supporting the arms thereon, said foot members being adapted to bear against an upright member, each of said ladder brackets including a stile engaging sleeve member adapted to be disposed on the ladder stile below the socket of said bracket, a first brace member having an upper end secured to the socket and a lower end thereof secured to said ladder stile engaging sleeve, a second diagonal brace member having an upper end secured to the arm adjacent the foot member thereof and a lower end secured to said ladder stile engaging member, a platform resting on and supported by said arms, and means adjustably and detachably securing the platform to each of said arms for varying the spacing between said brackets to accommodate the ladder jack to ladder stiles spaced different distances apart, said platform and means constituting the sole connection between the ladder brackets.

2. A ladder jack as in claim 1, the axis of the socket of each bracket being disposed at an obtuse angle to the axis of the arm of said bracket.

3. A ladder jack as in claim 1, and clamping means carried by each of the stile engaging sleeves and detachably clamping said sleeves to the ladder stiles.

4. A ladder jack as in claim 1, each of said ladder brackets including a guard rail supporting frame section detachably connected thereto and extending upwardly from the arm thereof at an incline away from the foot member, each of said frame sections including an upper guard rail engaging sleeve, and a guard rail extending through and supported by the sleeves of a said frame sections above said socket members.

5. A ladder jack or ladder stage of the character described comprising a pair of ladder brackets each including a supporting arm having an outturned outer end defining a foot member adapted to rest against an upright supporting member, a downwardly opening socket defining an inner end of each arm and disposed with its axis at an obtuse angle thereto, a ladder stile engaging member, connecting means connecting the ladder stile engaging member to said socket and to a portion of the arm disposed remote from the socket for rigidly supporting the stile engaging member beneath and in alignment with the socket, said connecting means comprising a first rod having one end secured to said socket and the other end thereof secured to said ladder stile engaging member and a second rod having one end secured to the arm, remote from the socket, and the other end thereof secured to said ladder stile engaging member, said sockets being adapted to engage over the upper ends of the stiles of a ladder and said stile engaging members engaging said ladder stiles below said sockets, a platform supported on said arms, and means detachably and adjustably securing the platform to said arms for securing the ladder brackets together in differently spaced positions relatively to one another to accommodate the ladder stage to ladders having stiles spaced different distances apart, said platform and means constituting the sole connection between said ladder brackets.

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