Oct. 1, 1963 J. L. BAUER 3,105,667

LADDER CLAMP

Filed Nov. 16, 1960

2 Sheets-Sheet 1

Fig.1

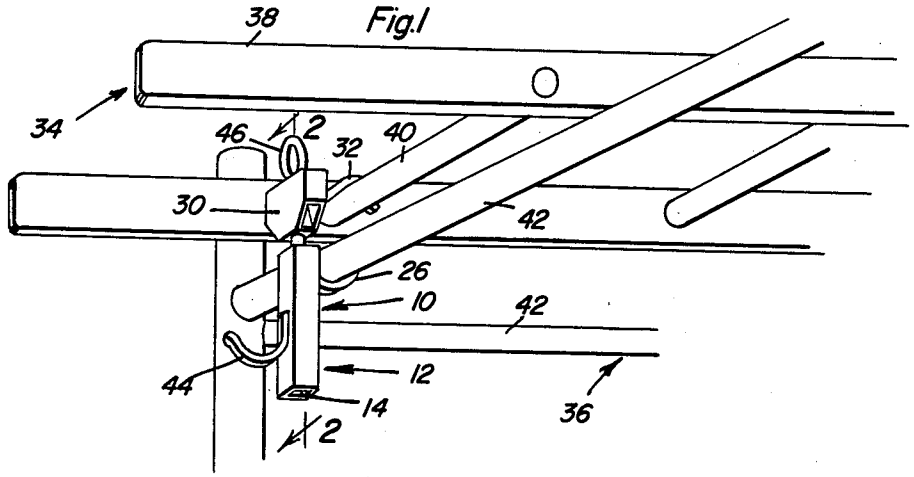


Fig.2

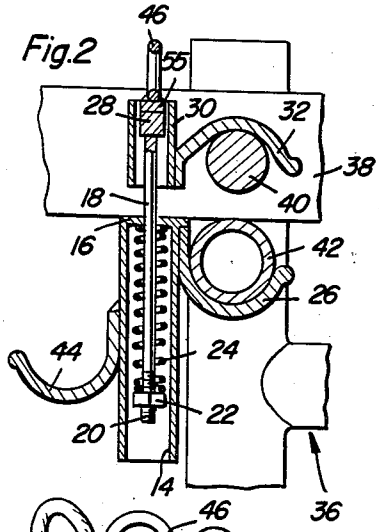


Fig.3

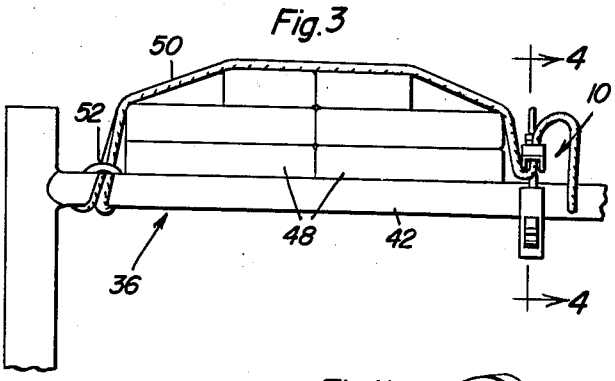


Fig.4

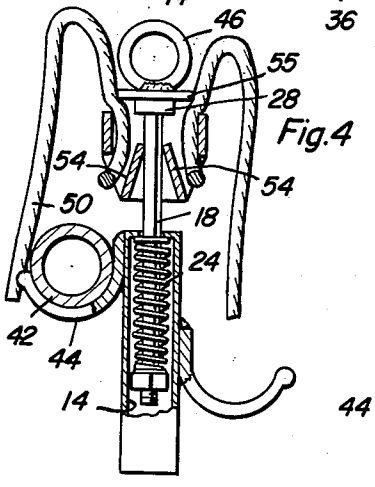


Fig.5

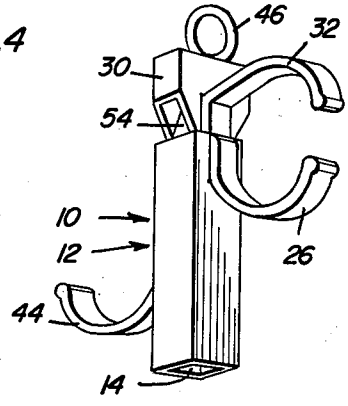
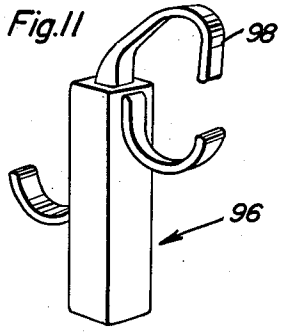


Fig.11



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Fig.6

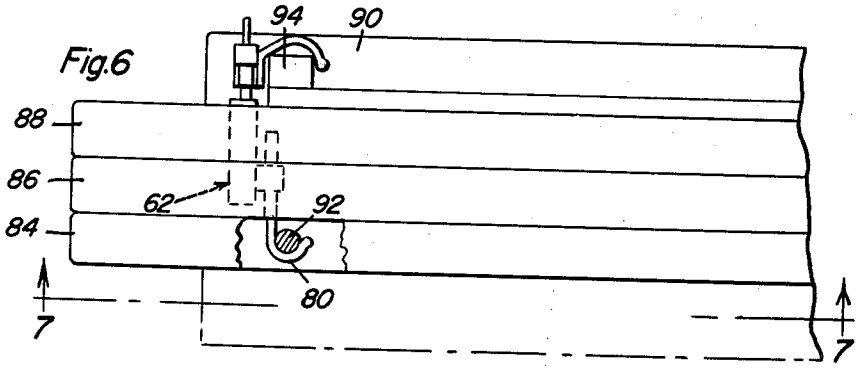


Fig.7

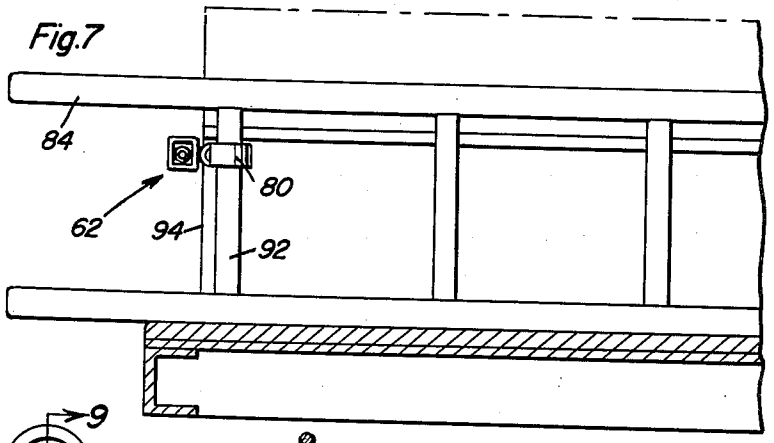


Fig.8

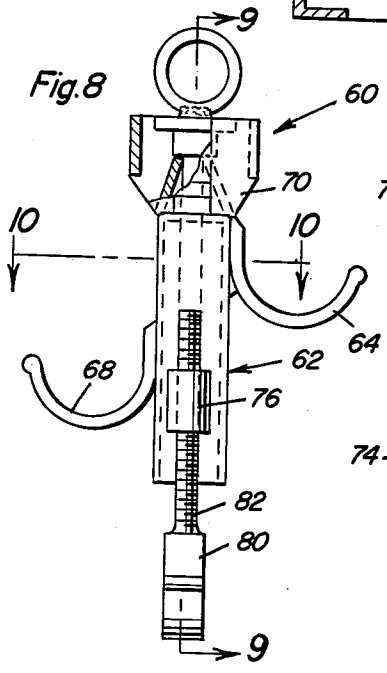


Fig.9

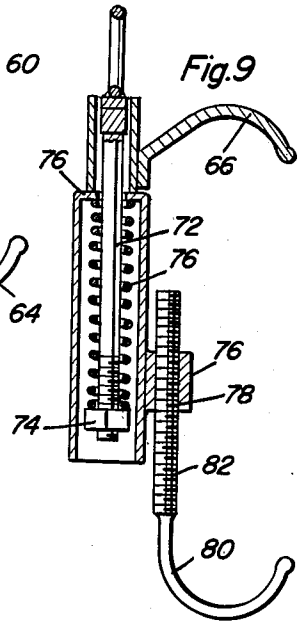
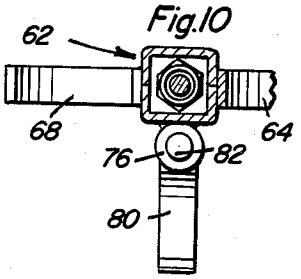


Fig.10



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3,105,667
LADDER CLAMP

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5 Claims. (Cl. 248—361)

This invention relates to a novel and useful ladder clamp and more particularly to a ladder clamp specifically adapted for fastening ladder sections to various types of support and storage structures such as the pipe framework usually mounted on trucks utilized to carry building and repair equipment such as ladders.

The ladder clamp of the instant invention can be used in various types of construction work such as an aid to positioning duct work and pipelines prior to permanent installation. One form of the ladder attachment includes a clamp feature which may be utilized to clampingly engage portions of rope engaged therewith used to tie down or to secure other building and repair equipment. Additionally, the clamp of the instant invention has proven very helpful in positioning various types of pipe prior to welding of adjoining pipe sections.

Heretofore vehicles upon which ladders and other repairing or building materials such as scaffolding planks were provided with supporting framework constructed of pipe or other similar materials and ladders and scaffolding planks and the like were secured to this pipe structure by means of ropes and other flexible tensioning members. The supporting framework constructed of pipe usually provided on trucks for carrying ladders and the like is disposed in the open and besides requiring additional time in order to secure ladders and other building and repair materials such as clamps thereto, the use of rope oftentimes would present additional problems such as knots formed therein being tightened due to moisture because of rain in which case the knots would require considerable time to untie resulting in a loss of time and a general sense of frustration. Although knotted ropes may easily be cut free, the severing of ropes in order to loosen the same as a rule of practice would result in the waste of considerable rope.

The main object of this invention is to provide a ladder clamp which may be conveniently used to secure ladders, scaffolding planks and other buliding and repair tools to the vehicles used to carry building and repair tools to and from the job.

A further object of this invention, in accordance with the immediately preceding object, is to provide a ladder clamp having at least two hooks thereon opening toward each other and resiliently urged together whereby the steps or side stiles of a ladder may be engaged by one clamp and a pipe of a suitable support may be engaged by the other clamp with the ladder clamp then being used to resiliently urge the ladder into tight frictional engagement with the support on which it is disposed.

Still another object of this invention is to provide a ladder clamp with hooks being provided on opposite ends thereof and opening toward each other and with one of the hooks being mounted for pivotal movement about the longitudinal axis of the ladder clamp whereby one hook may project from one side of the clamp and the other hook may project from the opposite side of the clamp if such positioning of the clamp is desired.

A final object to be specifically enumerated herein is to provide a ladder clamp which will conform to conventional forms of manufacture, be of simple construction and easy to use so as to provide a device that will be economically feasible, long lasting and relatively trouble free in operation.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a perspective view of one form of the ladder clamp of the instant invention being utilized to resiliently retain a ladder section in engagement with a pipe framework supporting structure;

FIGURE 2 is a vertical longitudinal sectional view taken substantially upon the plane indicated by the section line 2—2 of FIGURE 1 and on somewhat of an enlarged scale;

FIGURE 3 is a fragmentary end elevational view of a pipe frame supporting structure similar to that of FIGURE 2 having a plurality of scaffolding planks or the like supported thereby and another form of the ladder clamp of the instant invention being utilized in conjunction with a length of rope to secure the scaffolding planks in position upon the pipe framework supporting structure;

FIGURE 4 is an enlarged vertical sectional view taken substantially upon the plane indicated by the section line 4—4 of FIGURE 3;

FIGURE 5 is a perspective view of the ladder clamp shown in FIGURES 1 through 4 of the drawings;

FIGURE 6 is a side elevational view of a modified form of ladder clamp being utilized to secure a plurality of ladder sections upon a truck bed;

FIGURE 7 is a horizontal sectional view taken substantially upon the plane indicated by the section line 7—7 of FIGURE 6;

FIGURE 8 is an end elevational view of the ladder clamp illustrated in FIGURE 6 on somewhat of an enlarged scale and as seen from the right side of FIGURE 6, parts of the ladder clamp being broken away and shown in section;

FIGURE 9 is a vertical longitudinal sectional view taken substantially upon the plane indicated by the section line 9—9 of FIGURE 8; and

FIGURE 10 is a horizontal sectional view taken substantially upon the plane indicated by the section line 10—10 of FIGURE 8.

FIGURE 11 is a perspective view of still another simplified form of the invention.

Referring now more specifically to the drawings the numeral 10 generally designates the ladder clamp of the instant invention. The ladder clamp 10 includes an elongated body generally referred to by the reference numeral 12. The body 12 is hollow and is provided with a longitudinal opening 14 formed therethrough. The upper end of the body 12 is provided with an apertured end wall 16 and a slide bolt 18 is slidably and rotatably received through the apertured end wall 16. The lower end of the slide bolt 18 is provided with a threaded shank portion 20 on which there is threadedly engaged an abutment member or nut 22. A compression spring 24 is disposed between the confronting surfaces of the abutment member 22 and the inner face of the end wall 16.

The body member 12 is provided with a first hook member 26 which is secured to the outer surface thereof in any convenient manner. The hook 26 opens upwardly and toward the end of the slide bolt 18 projecting outwardly of the body 12.

The hook 26 projects laterally and outwardly away from the body 12 and the upper end of the slide bolt 18 is provided with an abutment member 28. Slidably disposed on the slide bolt 18 is a mounting sleeve 30. The mounting sleeve 30 has rigidly secured thereto a second hook member 32 which projects laterally and outwardly therefrom and is secured thereto in any convenient man-

ner. The mounting sleeve 30 is rotatably received on the slide bolt 18 and the abutment member 28 slightly rotated to bear against the outer upper end of the mounting sleeve 30. The compression spring 24 will resiliently urge the hook members 26 and 32 toward each other. As can best be seen in FIGURES 1 and 2 of the drawings, with the hook members 26 and 32 disposed in position opening toward each other and in alinement with each other the ladder clamp 10 may readily be used to secure the ladder generally referred to by the reference numeral 34 to the pipe framework supporting structure generally referred to by the reference numeral 36. The ladder 34 includes side stiles 38 and steps 40. The pipe framework supporting structure 36 includes sections of pipe 42 connected at adjacent ends and it may readily be seen that the hook 32 is engaged over one of the steps 40 of the ladder 34 and that the hook 26 is engaged under one of the pipe sections 42 of the pipe framework supporting structure 36 in order to resiliently urge the ladder 34 into tight seated engagement with the pipe frame supporting structure 36.

The body 12 of the clamp 10 also includes a third hook member 44 which is secured to the side of the body 12 remote from the hook member 26. The hook member 44 also projects laterally and outwardly of the body 12 and is secured thereto at a point spaced longitudinally therealong from the hook member 32.

The upper terminal end portion of the slide bolt 18 is provided with an eye 46 and with particular attention directed now to FIGURES 3 and 4 of the drawings it will be noted that a plurality of scaffolding planks 48 may be secured to the pipe framework supporting structure 36 by means of a length of rope 50 secured about one of the pipe sections 42 at its mid portion as at 52 and secured at its free end portions to the clamp 10. The hook 44 is first engaged under one of the pipe sections 42 whereupon the free ends of the rope 50 may be passed upwardly through the open lower end of the mounting sleeve 30 after raising and rotating the abutment 28 on the upper end of the slide bolt 18 by means of eye 46 in order to maintain the abutment member 28 withdrawn from the mounting sleeve 30 against the tension of spring 24.

As can best be seen in FIGURES 4 and 5 of the drawings the mounting sleeve 30 is generally rectangular in horizontal cross-section and is provided with a pair of oppositely inclined transverse bracing wall and guiding members 54. The bracing wall and guiding members 54 are spaced apart at their upper ends a distance sufficient to snugly and slidably receive therebetween the slide bolt 18. It is to be noted that the bracing walls 54 also provide a means for insuring that each of the ends of the rope 50 will be engaged by opposite sides of the abutment member 55. After the eye 46 of the clamp 10 has been raised to its uppermost point and the free ends of the rope 50 have been drawn upward through the mounting sleeve 30, the eye 46 is released and the force of the compression spring 24 will urge the rope clamp assembly comprising the abutment member 55 and the mounting sleeve 30 into tight clamping engagement with the ends of the rope 50 while at the same time resiliently maintaining a tension on the sections of the rope 50 disposed between the clamp 10 and the point at which the mid portion of the rope 50 is secured to the pipe section 42. In this manner, the scaffolding planks 48 and also ladder sections or the like may be secured to the pipe framework supporting structure 36.

Referring now more specifically to FIGURES 6–10 of the drawings, there will be seen a modified form of clamp generally referred to by the reference numeral 60. The clamp 60 is substantially identical with the clamp 10 in that it is provided with a body generally referred to by the reference numeral 62 which is substantially identical to the body 12. The body 62 includes a first hook 64, a second hook 66, and a third hook 68 corresponding to the hooks 26, 32 and 44 of the clamp 10 respectively. The mounting sleeve 70 of the clamp 60 is substantially identical to the mounting sleeve 30 and the clamp 60 also includes a slide bolt 72, an abutment member or nut 74, a compression spring 76 disposed between the abutment 74 and the upper apertured end wall 76 of the body 62. However, the body 62 includes a laterally and outwardly projecting mounting boss 76 provided with an internally threaded bore 78 extending longitudinally of and alongside of the body 62. A fourth hook 80 provided with a threaded shank portion 82 has its shank portion 82 threadedly engaged in the bore 78 whereby the hook 80 is also mounted for rotation about an axis extending longitudinally of the body 62 and for adjusted movement longitudinally of the body 62.

The fourth hook 80 is utilized to span greater distances between two articles which are to be secured together. With attention directed to FIGURES 6 and 7 of the drawings it will be noted that the hooks 80 and 66 may be utilized to secure a plurality of ladder sections 84, 86 and 88 to the body of a truck 90.

In FIGURES 6 and 7 the hook 80 is engaged with one of the steps 92 of the lowermost ladder 84 and the hook 76 is engaged over a horizontal member 94 of the truck body 90.

It is to be noted that the hooks 66 and 32 may be pivoted about the longitudinal axis of the bodies 62 and 12 respectively in order that they may be positioned to open towards and to oppose the hooks 80 and 26 or the hooks 68 and 44.

In FIGURE 11 of the drawings there will be seen a hook generally designated by the reference numeral 96 which is substantially the same as hook 10 except that it is not provided with a rope clamp assembly and the upper hook 98 thereof is secured directly to the slide bolt.

The foregoing is considered as illustrative ony of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A ladder clamp for securement between ladder steps and sides and support elements for retaining said ladder in position on said support element, said ladder clamp comprising an elongated body, a first hook member secured to said body, projecting laterally from one side of said body and opening toward one end of said body, a second hook, means movably mounting said second hook on said body for movement toward and away from said first hook, said second hook projecting laterally from said body and opening toward the other end of said body and said first hook, and means resiliently urging said second hook toward said other end of said body, said body being hollow and including an apertured end wall on said one end thereof, a slide member slidably disposed through said end wall, abutment means carried by the end of said slide member disposed in said body, said resilient means comprising a compression spring disposed between said abutment means and said end wall, said second hook carried by the end of said slide projecting outwardly of said end wall, a rope clamp assembly carried by the end of said slide projecting outwardly of said body, said rope clamp assembly including movable jaw means slidably mounted on said slide for coaction with a portion of said slide for clampingly engaging a piece of rope disposed therebetween.

2. The combination of claim 1, wherein said movable jaw means includes a sleeve-like first jaw member slidably disposed on said slide for movement longitudially of the latter, rope passage means through said jaw mem-

ber extending longitudinally of said jaw member, about said slide and opening outwardly through the end of said jaw member remote from said body, a second jaw member carried by said slide and receivable in the end of said passage means remote from said body for clamping at least one piece of rope extending through said passage means.

3. The combination of claim 2, wherein said slide includes an eye on the outer terminal end thereof for receiving therethrough portions of rope clampingly engaged by said rope clamp assembly.

4. The combination of claim 1 including a third hook secured to said body and projecting laterally from the other side and opening toward said one end thereof, said mounting means including means pivotally mounting the inner portion of said second hook for pivotal movement about the longitudinal axis of said body member whereby said second hook may be selectively aligned with said first and third hooks, said second hook including means coacting with said body member retaining said second hook in adjusted rotated positions relative to said body member, one of said first and third hooks being spaced closer to said second hook than the other.

5. The combination of claim 1 including a third hook

secured to said body and projecting laterally from the other side and opening toward said one end thereof, said mounting means including means pivotally mounting the inner portion of said second hook for pivotal movement about the longitudinal axis of said body member whereby said second hook may be selectively aligned with said first and third hooks, said second hook including means coacting with said body member retaining said second hook in adjusted rotated position relative to said body member, a fourth hook, said fourth hook including a threaded shank portion, a mounting boss projecting laterally outwardly of said body, a threaded bore in said mounting boss extending longitudinally of and alongside said body, said shank threadedly engaged in said boss, said mounting boss being carried by said body adjacent said other end thereof.

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