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United States Patent	12392197
Kind Code	B2
Date of Patent	August 19, 2025
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Ladder, top and method

Abstract

A ladder having a first rail. The ladder having a second rail. The ladder having a plastic top directly attached to the first rail and second rail with fasteners. The top having a first side and a second side. The first side having a gap with a surface with a V so a corner can fit into the V when the top leans against the corner. The surface of the first side having a first notch in the gap so a first rectangular plank can fit into the first notch when the top leans against the plank. The first notch having a width slightly larger than a width of the first plank. A ladder top. A method for using a ladder.

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Appl. No.: 16/839994

Filed: April 03, 2020

Prior Publication Data

Document Identifier	Publication Date
US 20200232280 A1	Jul. 23, 2020

Related U.S. Application Data

continuation parent-doc US 15395397 20161230 US 10612305 child-doc US 16839994

Publication Classification

Int. Cl.: E06C7/48 (20060101); E06C1/04 (20060101); E06C1/14 (20060101); E06C1/18 (20060101); E06C7/14 (20060101)

U.S. Cl.:

CPC E06C7/482 (20130101); E06C1/04 (20130101); E06C1/14 (20130101); E06C1/18 (20130101); E06C7/14 (20130101)

Field of Classification Search

CPC: E06C (7/482); E06C (7/14); E06C (1/04); E06C (1/14); E06C (1/18); B29C (45/14); B60R (11/00); B60R (1/04); B60R (2011/004); B60R (13/02)

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Background/Summary

CROSS-REFERENCE TO RELATED APPLICATIONS (1) This is a divisional of U.S. patent application Ser. No. 15/395,397 filed Dec. 30, 2016, now U.S. Pat. No. 10,612,305, which is related to U.S. design patent application Ser. No. 29/589,376 filed Dec. 30, 2016, all of which are incorporated by reference herein.

FIELD OF THE INVENTION

(1) The present invention is related to a top of a ladder that can stably lean against an external corner for a rectangular plank whose width is less than the width of the top. (As used herein,

references to the “present invention” or “invention” relate to exemplary embodiments and not necessarily to every embodiment encompassed by the appended claims.) More specifically, the present invention is related to a top of a ladder that can stably lean against an external corner for a rectangular plank whose width is less than the width of the top where the top has a first side with a surface and a gap, and the surface in the gap has a V to conform to the corner when the top leans against a corner, and the surface in the gap has a notch to conform to the rectangular plank when the top leans against the rectangular plank.

BACKGROUND OF THE INVENTION

(2) This section is intended to introduce the reader to various aspects of the art that may be related to various aspects of the present invention. The following discussion is intended to provide information to facilitate a better understanding of the present invention. Accordingly, it should be understood that statements in the following discussion are to be read in this light, and not as admissions of prior art.

(3) Ladders are commonly used to lean against surfaces that are wider than the width of a ladder top, or against corners. However, there are other surfaces, such as rectangular planks whose width is less than the width of a ladder top. It is desirable to be able to stably lean a ladder top against rectangular planks whose width is less than the width of the ladder top as well as external and internal corners.

BRIEF SUMMARY OF THE INVENTION

(4) The present invention pertains to a ladder. The ladder comprises a first rail. The ladder comprises a second rail. The ladder comprises a plastic top directly attached to the first rail and second rail with fasteners. The top having a first side and a second side. The first side having a gap with a surface with a V so a corner can fit into the V when the top leans against the corner. The surface of the first side having a first notch in the gap so a first rectangular plank can fit into the first notch when the top leans against the plank. The first notch having a width slightly larger than a width of the first plank. The top having a first cushion bonded to the first side without any mechanical fasteners.

(5) The present invention pertains to a top for a ladder to be leaned against a first rectangular plank or an external corner. The top has a first rail and a second rail. The top comprises a middle portion having a perimeter with a first side, second side, third side and fourth side extending down from the perimeter. The first side has a gap with a surface with a V so a corner can fit into the V when the top leans against the corner. The surface of the first side having a first notch in the gap so a first rectangular plank can fit into the first notch when the top leans against the plank. The first notch has a width slightly larger than a width of the first plank. The top being one piece and made of plastic. The third side having a first fastener hole to receive a first fastener to permanently attach the first rail to the third side. The fourth side has a second fastener hole to receive a second fastener to permanently attach the second rail to the fourth side.

(6) The present invention pertains to a method for using a ladder. The method comprises the steps of moving the ladder to a first rectangular plank. There is the step of leaning the ladder against the first rectangular plank so the rectangular plank is disposed in a first notch in a gap in a first side of a plastic top directly attached to a first rail and a second rail with fasteners. The top has a second side. The first side has the gap which has a surface with a V so a corner can fit into the V when the top leans against the corner. The surface of the first side having the first notch in the gap. The first notch having a width slightly larger than a width of the first plank.

Description

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

(1) In the accompanying drawings, the preferred embodiment of the invention and preferred

methods of practicing the invention are illustrated in which:

- (2) FIG. 1 shows an overhead view of a ladder top of the present invention.
- (3) FIG. 2 shows a ladder with the ladder top.
- (4) FIG. 3 shows an underside view of the ladder top.
- (5) FIG. 4 shows a front view of the ladder top.
- (6) FIG. 5 shows an overhead view of the ladder top against an external corner.
- (7) FIG. 6 shows an overhead view of the ladder top against a first rectangular plank.
- (8) FIG. 7 shows an overhead view of the ladder top against a second rectangular plank.
- (9) FIG. 8 is an overhead view of the ladder top against an internal corner.
- (10) FIG. 9 is an overhead view of the ladder top against a wall.
- (11) FIG. 10 is a perspective view of a stepladder of the present invention.
- (12) FIG. 11 is a perspective view of an alternative embodiment of the ladder top.
- (13) FIG. 12 is a top view of the alternative embodiment of the ladder top.
- (14) FIG. 13 is a left side view of the alternative embodiment of the ladder top.
- (15) FIG. 14 is a bottom view of the alternative embodiment of the ladder top.
- (16) FIG. 15 is a bottom view of a second alternative embodiment of the ladder top.
- (17) FIG. 16 is a front view of the second alternative embodiment of the ladder top.
- (18) FIG. 17 is a right side view of the second alternative embodiment of the ladder top.
- (19) FIG. 18 is a left side view of the second alternative embodiment of the ladder top.
- (20) FIG. 19 is an overhead view of the second alternative embodiment of the ladder top.
- (21) FIG. 20 is a rear view of the second alternative embodiment of the ladder top.
- (22) FIG. 21 shows a front perspective view of the second alternative embodiment of the ladder top.
- (23) FIG. 22 shows a rear perspective view of the second alternative embodiment of the ladder top.

DETAILED DESCRIPTION OF THE INVENTION

(24) Referring now to the drawings wherein like reference numerals refer to similar or identical parts throughout the several views, and more specifically to FIGS. 1-4, thereof, there is shown a ladder 10. The ladder 10 comprises a first rail 12. The ladder 10 comprises a second rail 14. The ladder 10 comprises a plastic top 16 directly attached to the first rail 12 and second rail 14 with fasteners 78. The top 16 has a first side 18 and a second side 20. The first side 18 has a gap 22 with a surface 24 with a V 26 so an external corner 28, as shown in FIG. 5 can fit into the V 26 when the top 16 leans against the corner 28. The surface 24 of the first side 18 has a first notch 30 in the gap 22 so a first rectangular plank 34 can fit into the first notch 30 when the top 16 leans against the plank, as shown in FIG. 6. The first notch 30 has a width slightly larger than a width of the first plank 34. The top 16 having a first cushion 70 bonded to the first side without any mechanical fasteners. As shown in FIG. 14, the cushion 70 may be connected via barbs or protrusions 134 extending through cavities or openings 135.

(25) The first notch 30 may be in the V 26. The surface 24 of the first side 18 may have a second notch 32 in the gap 22 having a width greater than the width of the first notch 30 so a second rectangular plank 36 having a width slightly smaller than the width of the second notch 32 can fit into the second notch 32 when the top 16 leans against the second plank 36, as shown in FIG. 7. The second notch 32 may be in the V 26.

(26) The surface 24 of the first side 18 may have a first straight segment 38, a second straight segment 40, a third straight segment 42, a fourth straight segment 44, a fifth straight segment 46, a sixth straight segment 48, a seventh straight segment 50 and an eighth straight segment 52, as shown in FIG. 1. The second straight segment 40 may directly connect with the first straight segment 38 to form a bottom 88 of the V 26. The third straight segment 42 may directly connect with the first straight segment 38 at an angle greater than 100° and less than 170°. The fourth straight segment 44 may directly connect with the second straight segment 40 at an angle greater than 100° and less than 170°. The fifth straight segment 46 may directly connect with the third

straight segment **42** at an angle of about 90° . The sixth straight segment **48** may directly connect with the fourth straight segment **44** at an angle of about 90° . The third, fourth, fifth and sixth straight segments **42**, **44**, **46**, **48** together forming the first notch **30**.

(27) The surface **24** of the first side **18** may have a ninth straight segment **54**, a tenth straight segment **56**, an eleventh straight segment **58** and a twelfth straight segment **60**. The eleventh straight segment **58** may directly connect with the ninth straight segment **54** at an angle of about 90° . The twelfth straight segment **60** may directly connect with the tenth straight segment **56** at an angle of about 90° . The ninth, tenth, eleventh and twelfth straight segments **54**, **56**, **58**, **60** together forming the second notch **32** in the gap **22** having a width greater than the width of the first notch **30** so the second rectangular plank **36** having a width slightly smaller than the width of the second notch **32** can fit into the second notch **32** when the top **16** leans against the second plank **36**.

(28) The surface **24** of the first side **18** may have a thirteenth straight segment **62** and a fourteenth straight segment **64**. The thirteenth straight segment **62** may directly connect with the fifth straight segment **46** and the ninth straight segment **54** and is in linear alignment with the first straight segment **38**. The fourteenth straight segment **64** may directly connect with the sixth straight segment **48** and the tenth straight segment **56** and is in linear alignment with the second straight segment **40**.

(29) The first cushion **70** may be attached to the surface **24** of the first side **18** in the gap **22** at the thirteenth straight segment **62** and a second cushion **72** attached to the surface **24** of the first side **18** in the gap **22** at the fourteenth straight segment **64**. The first and second cushions **70**, **72** protect the corner **28** from being scratched or marred by the top **16** when the top **16** leans against the corner **28**. The top **16** may have a third side **84** directly connected to the first side **18** and the second side **20** and a fourth side **86** directly connected to the first side **18** and the second side **20**. The first rail **12** may be permanently attached with a first fastener **80** to the third side **84** and the second rail **14** maybe permanently attached with a second fastener **82**. The ladder **10** may include a third cushion **74** attached to the surface **24** of the first side **18** at the seventh straight segment **50** and a fourth cushion **76** attached to the surface **24** of the first side **18** at the eighth straight segment **52**.

(30) The top **16** may have a middle portion **92** disposed between a perimeter **94** of the top **16** defined by the first, second, third and fourth sides **18**, **20**, **84**, **86**. The middle portion **92** may have a paint can indentation **96** to hold a paint can, and a tool hole **90** to hold a tool, such as a screwdriver or pliers or drill. There may be several tool holes **90** in the middle portion **92** to accommodate a number of different types of tools.

(31) The surface **24** of the first side **18** may have a fifteenth straight segment **66** that directly connects with the third side **84** and to the seventh straight segment **50** at an angle between 20° and 70° , and a sixteenth straight segment **68** that directly connects with the fourth side **86** and the eighth straight segment **52** at an angle between 20° and 70° . As shown in FIG. **8**, the angular position of the seventh and eighth straight segments allow the seventh and eighth straight segments, and thus the top **16**, to fit stably against an internal corner **98** when the top **16** leans against an internal corner **98**. Additional cushions may be used as desired along the first side **18**. When leaning against a wide surface, such as a wall **100** as shown in FIG. **9**, the third cushion on the seventh straight segment and the fourth cushion on the eighth straight segment of the top **16** will rest against the wall **100**.

(32) The present invention pertains to a top **16** for a ladder **10** to be leaned against a first rectangular plank **34** or an external corner **28**. The top has a first rail and a second rail. The top comprises a middle portion **92** having a perimeter **94** with a first side **18**, second side **20**, third side **84** and fourth side **86** extending down from the perimeter **94**. The first side **18** has a gap **22** with a surface **24** with a V **26** so a corner **28** can fit into the V **26** when the top **16** leans against the corner **28**. The surface **24** of the first side **18** having a first notch **30** in the gap **22** so a first rectangular plank **34** can fit into the first notch **30** when the top **16** leans against the plank **34**. The first notch **30** has a width slightly larger than a width of the first plank **34**. The top **16** being one piece and

made of plastic and the cushions made of rubber. The third side **84** having a first fastener hole **102** to receive a first fastener **80** to permanently attach the first rail **12** to the third side **84**. The fourth side **86** has a second fastener hole **104** to receive a second fastener **82** to permanently attach the second rail **14** to the fourth side **86**.

(33) As shown in FIGS. **4** and **5**, the top **16** has a first flap **120** having a rectangular shape which conforms with the shape of the top side of the first rail **12**, and having a first fastener hole **102** and a second fastener hole **104** that receives a first fastener **78** and a second fastener **80**, respectively, to fasten the first flap **122** to the inner top side of the first rail **12**. The first flap **120** extends down from the middle portion **92** of the top **16** near to and inside of the third side **84**. The third side **84** has an L shape with a flat portion **122** that lines with and turns into the first side **18**, and a lower portion **124** that extends down from the flat portion **122**. The second side **20** extends down from the perimeter **94** the same distance is the lower portion extends down from the perimeter and forms a smooth continuous surface with the lower portion. In the space created between the first flap **120** and the lower portion **124** the top side of the first rail **12** fits and is essentially protected somewhat on the outside from the lower portion **124** and at the front from the second side **20** and from the inside by the first flap **120**. The second rail **14** is similarly attached to a second flap **130** in spaced relationship with the fourth side **86**. In this manner, the top **16** attaches to the first and second rails of an extension ladder.

(34) In this manner, the ladder top **16** can also be attached to a step ladder **140**, as shown in FIG. **10**, where the stepladder has a first hinge **150** that attaches to and extends from the first rail **12** and a second hinge **152** that attaches to and extends from the second rail **14**. The first and second hinges are in spaced relation with the ladder top **16**. A third rail **154** attaches to the first hinge **150** and a fourth rail **156** attaches to the second hinge **152**. The third rail **154** and the fourth rail **156** are able to move between an open, use position, and a closed position with the first hinge **150** and second hinge **152**, respectively, as is well known in the art. There are rungs attached to the third and fourth rails, as well as brackets which fold attached between the first rail **12** and the third rail **154**, and between the second rail **14** and the fourth rail **156**. When the stepladder is in a closed position, with the rails essentially in parallel with each other, the stepladder can be leaned on the top **16** against structures, such as described above, with the notches for planks and the V shape for an external corner and the angled corner segments for an internal corner, and be more securely kept in position without sliding or falling over.

(35) FIGS. **11-14** show another embodiment of the top **16** that is preferably used with the stepladder embodiment. Note, there are no flaps, but instead, the first rail **12** attaches to the third side **84** with fasteners **78** extending through fastener holes in the third side **84**; and the second rail **14** attaches to the fourth side **86** with fasteners **78** extending through fastener holes in the fourth side **86**.

(36) FIGS. **15-22** show a second alternative embodiment of the top **16** having bungee slots **180** in the third side **84** and fourth side **86** for holding tools with bungee straps. In addition, a magnet **170** is completely encapsulated in the top **16**, as shown in FIGS. **15** and **19**. When the top **16** is being formed, the magnet, which is a single solid element, is placed on pins in the mold so that when the molten plastic fills the mold it encompasses the magnet.

(37) The present invention pertains to a method for using a ladder **10**. The method comprises the steps of moving the ladder **10** to a first rectangular plank **34**. There is the step of leaning the ladder **10** against the first rectangular plank **34** so the rectangular plank **34** is disposed in a first notch **30** in a gap **22** in a first side **18** of a plastic top **16** directly attached to a first rail **12** and a second rail **14** with fasteners **78**. The top **16** has a second side **20**. The first side **18** has the gap **22** which has a surface **24** with a V **26** so a corner **28** can fit into the V **26** when the top **16** leans against the corner **28**. The surface **24** of the first side **18** having the first notch **30** in the gap **22**. The first notch **30** having a width slightly larger than a width of the first plank **34**.

(38) In the operation of the invention, in one embodiment, a molded top **16** fits on the upper rail

ends of the fly section of an extension ladder **10**. The top **16** has locations at its middle portion **92** to permit the temporary placement of tools when the user is working at the upper end of the ladder **10**. The back or first side **18** of the top **16** is specifically designed so that the ladder **10** may be leaned against a wide flat surface, such as a wall **100** as shown in FIG. **9**, may be leaned against an external corner **28** as shown in FIG. **5**, and may be leaned against and closely engage a rectangular plank, such as **6"** wide or **4"** wide lumber as shown in FIGS. **6** and **7**.

(39) When leaning against an external corner **28**, the V shape of the external corner **28** fits into the V **26** of the top **16** formed by the first straight segment **38** and the second straight segment **40**. The first straight segment **38** directly connects with the second straight segment **40**, typically at an angle of about 90° , to match a typical external corner **28**. In addition, the external corner **28**, when the top **16** is leaning against the corner **28** and the external corner **28** is in the gap **22**, the external corner **28** also contacts the first cushion **70** on the thirteenth straight segment **62**, which is in linear alignment with the first straight segment **38**, and the second cushion **72** which is on the fourteenth straight segment **64** which is in linear alignment with the second straight segment **40**. By being in linear alignment with the first and second straight segments **38**, **40**, the thirteenth straight segment **62** and the fourteenth straight segment **64**, respectively, effectively extend the length of the V **26** to provide a larger V and thus a larger surface area for the top **16** to rest against and consequently a more secure and stable fit of the top **16** with the external corner **28**.

(40) Similarly, when the top **16** leans against an internal corner **98**, the fifteenth straight segment **66** and the sixteenth straight segment **68**, which directly connect to and form an angle of about 45° with the seventh straight segment **50** and the eighth straight segment **52**, respectively, stably rest against and align with the walls that form the internal corner **98**. In this way the top can be disposed in an internal corner for a user to use, with a greater surface area of the top **16** contacting the walls of the internal corner **98** than if the fifteenth and sixteenth straight segments did not exist or were not that about a 45° angle relative to the seventh and eighth straight segments.

(41) The first notch **30** and the second notch **32** are disposed in, or integrated with and break up the V **26** in the gap **22**. The first notch **30** conforms to the rectangular cross-section of a rectangular plank, such as a 4 inch wide plank. The first notch **30** is slightly larger in width than the width of the 4 inch plank so that when the top **16** leans against the 4 inch plank, the first notch **30** receives the 4 inch plank rather snugly so there is essentially no movement between the top **16** and the 4 inch plank and the top **16** is stably positioned with the 4 inch plank.

(42) Similarly, the second notch **32** conforms to the rectangular cross-section of a rectangular plank, such as a 6 inch wide plank. The second notch **32** is slightly larger in width than the width of the 6 inch plank so that when the top **16** leans against the 6 inch plank, the second notch **32** receives the 6 inch plank rather snugly so there is essentially no movement between the top **16** and the 6 inch plank top **16** is stably positioned with the 6 inch plank.

(43) Outside the gap **22** on either side of the top **16** there is a third cushion **74** and fourth cushion which will contact a flat section, such as a wall, when the top **16** leans against the wall. The third and fourth cushions **74**, **76** protect the wall from being marred or scratched by the top **16** when the top **16** leans against the wall.

(44) The ladder top **16** with the cushions or pads is formed from 2 distinct materials. A mold utilizing a rotating platen to process two materials in the same part produces the ladder top **16** with the cushions. The ladder top **16** is made of polypropylene and the soft rubber pads or cushions are made of a Thermoplastic Vulcanizate (TPV), specifically under the brand name Santoprene (TPV). In the production process, a mold for the top **16** receives the molten plastic. A removable portion of the mold creates cavities or openings **135** in the first side **18** where the cushions will ultimately be located. After the top **16** is formed, it stays in the stationary portion of the mold and the removable portion of the mold is replaced with a second removable portion of the mold. The overall mold is then closed and liquid TPV is introduced into the mold to fill the cavities that are then present in the preformed top **16**. The TPV is allowed to cool resulting in the presence of the cushions with the

top **16**. These cushions form both mechanical and a chemical bond with the top **16**, for added strength to prevent the cushions from separating from the first side **18**. The molten TPV chemically reacts with the polypropylene to create the chemical bond, as well as with the cooling TPV forming a mechanical bond.

(45) The rails and the rungs themselves are standard commonly available components. The width of the top **16** is preferably between 13 and 20 inches. The length of the ladder top is between 5 and 10 inches. The height of the ladder top is between 2 and 7 inches. The thickness of the ladder top is between $\frac{1}{8}$ of an inch and $\frac{3}{8}$ of an inch. Buttressing (each rib being between 0.1 and 0.2 inches thick) underneath the top **16** can be utilized as shown in the figures. The ladder **10** with any of the embodiments described herein of the top **16** when leaning against a surface at 75.5° can support a load on the ladder of at least 600 pounds without failing.

(46) Although the invention has been described in detail in the foregoing embodiments for the purpose of illustration, it is to be understood that such detail is solely for that purpose and that variations can be made therein by those skilled in the art without departing from the spirit and scope of the invention except as it may be described by the following claims.

Claims

1. A ladder comprising: a first rail coupled to a second rail via a first plurality of rungs; a third rail coupled to a fourth rail via a second plurality of rungs and connected to the first rail and the second rail via a hinge; a ladder top coupled to at least the first rail and the second rail, wherein the ladder top includes a first end coupled to the first rail and a second end coupled to the second rail; wherein the ladder top includes a front side and a back side substantially parallel to one another and coupled to the first end and the second end, and a top surface coupled to the front side, the back side, the first end, and the second end, wherein the front side includes a notch, a flat front surface, a first flat corner surface extending obliquely between the flat front surface and the first end, and a second flat corner surface extending obliquely between the flat front surface and the second end, and four separate and spaced pads, wherein a first pad of the pads extends from the flat front surface to the first flat corner surface and a second pad of the pads extends from the flat front surface to the second flat corner surface, and wherein at least some of the four pads are configured to contact a surface to avoid marring said surface, and wherein the front side includes openings extending through the front side and configured to receive protrusions disposed on the four pads to couple the four pads to the front side.

2. The ladder of claim 1 wherein the notch includes two sides and one of the four pads is disposed on each side of the notch, the pads disposed on each side of the notch are angled at approximately 90 degrees from one another and configured to receive an external corner when the ladder is leaned against the external corner.

3. The ladder of claim 1 wherein the first pad and the second pad are configured to contact a wall when the ladder is leaned against the wall, and wherein at least a portion of the first pad and the second pad are substantially parallel to one another.

4. The ladder of claim 1 wherein the first pad and the second pad are configured to contact each side of an internal corner when the ladder is leaned against the internal corner.

5. The ladder of claim 1 wherein the four pads are coupled to the front side using adhesive.

6. The ladder of claim 1 wherein the four pads are coupled to the front side using the protrusions and adhesive.

7. The ladder of claim 1 wherein the top surface includes tool slots.

8. The ladder of claim 1 wherein the first pad spans approximately half of a length of each of the first flat corner surface and the second pad spans approximately half of a length of the second flat corner surface.

9. The ladder of claim 1 wherein the first pad and the second pad together span approximately a

full length of the front side.

10. The ladder of claim 1 wherein the first pad and the second pad each include at least two protrusions and the front side includes at least two corresponding openings for the at least two protrusions on each of the first pad and the second pad.

11. The ladder of claim 1 wherein the protrusions disposed on the pads are formed as a single piece with the respective pad.

12. A ladder comprising: a first rail coupled to a second rail via a first plurality of rungs; a third rail coupled to a fourth rail via a second plurality of rungs and connected to the first rail and the second rail via a hinge; a ladder top coupled to at least the first rail and the second rail, wherein the ladder top includes a first end coupled to the first rail and a second end coupled to the second rail; wherein the ladder top includes a front side and a back side substantially parallel to one another and coupled to the first end and the second end, and a top surface coupled to the front side, the back side, the first end, and the second end, wherein the front side includes a notch, a flat front surface, a first flat corner surface, and a second flat corner surface, and a plurality of pads, wherein a first pad of the plurality of pads extends from the flat front surface to the first flat corner surface and a second pad of the plurality of pads extends from the flat front surface to the second flat corner surface, and wherein at least some of the plurality of pads are configured to contact a surface to avoid marring said surface, and wherein the front side includes openings extending through the front side and configured to receive protrusions disposed on the plurality of pads to couple the plurality of pads to the front side.

13. The ladder of claim 12 wherein the notch includes two sides and at least some of the plurality of pads are disposed on each side of the notch, the pads disposed on each side of the notch are configured to receive an external corner when the ladder is leaned against the external corner.

14. The ladder of claim 12 wherein the first pad and the second pad are configured to contact a wall when the ladder is leaned against the wall.

15. The ladder of claim 12 wherein the first pad and the second pad are configured to contact each side of an internal corner when the ladder is leaned against the internal corner.

16. The ladder of claim 12 wherein the plurality of pads are coupled to the front side using adhesive.

17. The ladder of claim 12 wherein the plurality of pads are coupled to the front side using the protrusions and adhesive.

18. The ladder of claim 12 wherein the first pad spans approximately half of a length of the first flat corner surface and the second pad spans approximately half of a length of the second flat corner surface.

19. The ladder of claim 12 wherein the first pad and the second pad together span approximately a full length of the front side.

20. The ladder of claim 12 wherein the first pad and the second pad each include at least two protrusions and the front side includes at least two corresponding openings for the at least two protrusions on each of the first pad and the second pad.

21. The ladder of claim 12 wherein at least one of the first end and the second end include a bungee slot.

22. The ladder of claim 12 wherein the protrusions disposed on the plurality of pads are formed as a single piece with the respective pad.
