A width conversion tool used to form a crease in the rear surface of a panel profile. The conversion tool has two legs with a gap formed therebetween which the rear surface slides through. A crease is formed in the rear surface by rollers and/or raised surfaces which protrude into the gap and deform the rear surface as it passes through the gap.
WIDTH CONVERSION TOOL FOR USE WITH A DRYWALL CORNER FINISHING DEVICE AND METHOD OF USING SAME

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] This invention relates to a device for making creases in a surface. In particular, this invention relates to a device for making a crease in the rear surface of a drywall corner finishing device.

[0003] 2. Statement of the Problem

[0004] Applicant’s prior U.S. application Ser. No. 09/978, 862 described a drywall corner finishing device that simplified the installation of drywall, provided a perfectly straight corner without the use of multiple coats of plaster, could be used on both inside and outside corners having various angles, could be used to cover juxtaposed outside corners, could be used with various thicknesses of drywall, and was able to be economically manufactured. The finishing device is used to form a corner between two panels of drywall, having a flexible joint extending along a predetermined axis. Two wings are connected to and extend outwardly in a diverging relation from the flexible joint to form a corner having an adjustable angle. Each wing has a front surface, a rear surface, and a surface distal from the flexible joint. A panel of drywall may be inserted between the front and rear surfaces of each wing, and abuts the distal surface extending therebetween. A flexible flange joint is provided where the distal surface and the rear surface intersect to allow the finishing device to be used with a drywall panel which is thicker than the space between the front and rear surface.

[0005] When the finishing device is used with a relatively thicker drywall panel, the rear surface flange pivots backwards at the flange joint when the panel is inserted and abutted against the distal surface. The rear surface flange would then be pressed back against the drywall panel as the finishing device and drywall panel were pressed against and affixed to the framing surface.

[0006] Thus, the finishing device could be used with relatively thicker drywall panels. However, it was found that, when used in this way, the panels had a tendency to push out away from the distal surface and the device pushed away from the framing surface due to the rearward pivoting rear surface flange. This required extra care by the drywall installer to hold the device and drywall panels in place before being affixed to the framing surface.

[0007] A need exists for a way to allow the drywall corner finishing device to be used with relatively thicker drywall panels without the tendency for the panels to push out of the finishing device and the device to push away from the framing surface. The width conversion tool of the present invention fulfills this need.

[0008] 3. Solution to the Problem

[0009] The width conversion tool described herein can be used to form a crease in the rear surface flange in a finishing device. The crease counteracts the tendency of the rear surface flange to push the inserted panel out and to push away from the framing surface, when relatively thicker drywall panels are used. Thus, not as much care is needed to support and hold the finishing device and drywall panels in place before they are affixed to the framing surface.

SUMMARY OF THE INVENTION

[0010] A width conversion tool used to form a crease in the rear surface flange of a drywall corner finishing device. The crease is formed distal the flange joint on the rear surface and causes the rear surface flange to bend inwards, thus counteracting the outward pivoting of the rear surface flange at the flange joint when a relatively thicker drywall panel is inserted between the front and rear surface of the finishing device.

[0011] The width conversion tool has front and rear legs rigidly connected to each other at the top. A gap is formed between the two legs. At least one spindle having at least one raised portion protrudes from a leg into the gap. At least one crease roller on the leg opposite the spindle protrudes into the gap. The crease roller is located below at least one of the raised portions.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] The present invention can be more readily understood in conjunction with the accompanying drawings, in which:

[0013] FIG. 1 is a front, left perspective view of an embodiment of the width conversion tool in accordance with the present invention;

[0014] FIG. 2 is a front view thereof;

[0015] FIG. 3 is a left side view thereof;

[0016] FIG. 4 is a rear view thereof;

[0017] FIG. 5 is a bottom view thereof;

[0018] FIG. 6 shows a cross-sectional view taken along line 6-6 as shown in FIG. 1;

[0019] FIG. 7 shows how the width conversion tool is used by running the rear surface flange of the drywall corner finishing device through the conversion tool;

[0020] FIG. 8 shows a partial side view of the drywall corner finishing device;

[0021] FIG. 9 shows a partial side view of the drywall corner finishing device with a relatively wider drywall panel inserted between the front and rear surface;

[0022] FIG. 10 shows a partial side view of the drywall corner finishing device with a crease made on the rear surface flange thereof by the width conversion tool, and with a relatively wider drywall panel inserted between the front and rear surface.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0023] Drywall panels are conventionally supplied in predetermined widths, for example, and not meant to be inclusive, ⅛ inch, ⅝ inch and ⅛ inch widths, etc. Rather than use a separate drywall corner finishing device for every predetermined thickness of drywall panel, one can use the embodiment of the drywall corner finishing device 1000 illustrated in FIGS. 8-10 to conform to any width of drywall panel.
A brief discussion of the finishing device 1000 is first needed before the present invention can be described.

The finishing device has left 1102 and right 1104 wings attached to a flexible center joint 1100 and extend outwardly therefrom. The wings 1102 and 1104 have a front surface 1106 and a rear surface 1108 with a series of struts 1111 extending therebetween. The most distal strut on each wing creates a distal surface 1110 which defines a space 1114 between the front 1106 and rear 1108 surfaces. Where the distal surface 1110 and the rear surface 1108 intersect, a flange pivot 1113 is formed which allows that portion of the rear surface 1108 distal the flange pivot, called the rear surface flange 1204, to pivot rearward when a relatively thicker drywall panel 1600 is inserted into the space 1114 between the front 1106 and rear 1108 surfaces.

When a relatively thicker drywall panel 1600 is inserted into space 1114 and abuts distal surface 1110, rear surface flange 1204 pivots rearward at flange pivot 1113. However, the finishing device 1000 typically is made of a resilient material, such as plastic, and the rear surface flange 1204 tends to want to return to its normal position thus pushing the drywall panel out of space 1114 and pushing against the framing surface before it is affixed. This requires extra care and support by the drywall installer to hold the finishing device 1000 and the drywall panel 1600 in place as it is affixed.

The drywall corner finishing device is typically manufactured to accommodate, without expanding the rear surface flange 1204, the average sized drywall panel width or the most common drywall panel width. For example, the drywall corner finishing device 1000 is typically manufactured to exactly accommodate a ⅜ inch drywall panel. The front 1106 and rear 1108 surfaces of the wings taper inwards, allowing in this example a ⅛ inch width drywall panel to fit within space 1114, and allowing a ⅛ inch width drywall panel to fit within space 1114 if rear surface flange 1204 is pivoted rearwards.

To use the tool 100, the front portion 102 is placed between the front 1106 and rear 1108 surfaces of the finishing device 1000, with the rear surface 1108 placed within the gap 108. The tool 100 is designed, configured and proportioned such that, when the rear surface flange 1204 is inserted completely into gap 108 as described above, rear edge 1202 abuts back wall 124, the first raised surface 116 is located on the proximate side to the flexible joint 1100 of the flange joint 1113, and the crease surface 120 and the second raised surface are located on the distal side of the flange joint 1113. The tool 100 is then moved transversely along the rear surface edge 1202.

The first 116 and second 118 raised surfaces are preferably formed on a single spindle 114 directly opposite the crease surface 120. The crease surface 120 and spindle 114 preferably have circular diameters and rotate about a fixed axis allowing the rear surface flange to more easily pass through the gap 108.

The movement of the tool 100 along the rear surface edge 1202 as described above causes the rear surface flange 1204 to pivot, and deform rearwards at the flange pivot 1113. Also created is a crease 1212 located distal from the flange pivot 1113, which deforms the rear flange 1204 forward.

FIG. 7 shows the use and movement of the tool 100 relative to the finishing device 1000 to create the described deformations at the flange pivot 1113 and the crease 1212.

FIG. 9 shows a relatively thicker drywall panel 1600 inserted into an unmodified finishing device 1000. FIG. 10 shows a relatively thicker drywall panel 1600 being inserted into a finishing device 1000 modified by the tool 100 to predeform the flange pivot 1113 and create the crease 1212.

The tool 100 may be incorporated into the manufacturing equipment to predeform drywall corner finishing devices as they are made, or the tool 100 may be incorporated into a handheld device for use on the jobsite by the drywall installer as needed. The tool 100, whether incorporated in a handheld device or into manufacturing equipment, may be operated manually, by an electric motor, as pressurized air tool, with an internal combustion engine, or by any other type of power source. In a handheld device it is important that the device be able to be equally operated with either a left hand or right hand.

By way of example, the conversion tool for use with a finishing device having a two inch wide rear surface flange to be modified for use with ⅜ inch thick drywall panel has the following preferred dimensions. The inner surface of the front leg is ⅛ inch wide, top to bottom, forming the gap. The crease roller is located at the bottom edge of the front leg and extends approximately ⅛ inch into the gap, the gap being approximately ⅛ inch wide. The spindle is disposed through the rear leg directly opposite the crease surface and has first and second raised surfaces. The first raised surface is located approximately ⅛ inch below the crease roller and extends approximately ¼ inch out of the inner surface of the rear leg. The second surface is located approximately ⅛ inch above the crease surface and extends approximately ¼ inch into the gap.

However, this example is in no way meant to be limiting since any width may be accommodated by simply changing the size and/or spacing of the raised surfaces/rollers.

It is noted that the drywall corner finishing device described in the Applicant’s prior U.S. application Ser. No. 09/978,862 is now being used with many other types of panels other than drywall panels. The conversion tool of the present invention is not limited to modifying the Applicant’s drywall corner finishing device for use only with drywall. Any type of panel may be used with such a modified device. Furthermore, the conversion tool also works to modify similar drywall panel devices. These drywall panel devices and the Applicant’s finishing device are generally known as “profile panels”.

In the drawings and specification, there has been disclosed a typical preferred embodiment of the invention. Although specific terms are employed, they are used in a generic and descriptive sense only and not for purposes of limitation. The scope of the invention is set forth in, and is limited only by the following claims.

I claim: 1. A width conversion tool for a panel profile comprising:
   front and rear legs rigidly connected to each other at a top end;
   a gap formed between said front and rear portions;
   at least one raised surface disposed on either said front or rear leg and a portion of said raised surface extending into said gap; and
at least one crease surface disposed on the leg opposite said raised surface and located below a level of one of said at least one raised surface.

2. The width conversion tool of claim 1 having at least one spindle with two raised surfaces, said crease surface being located transversely between said raised surfaces.

3. The width conversion tool of claim 2 having one spindle and one crease surface.

4. The width conversion tool of claim 2 wherein said at least one spindle rotates about a fixed axis.

5. The width conversion tool of claim 1 wherein said at least one crease surface rotates about a fixed axis.

6. The width conversion tool of claim 3 wherein said spindle and said crease surface are disposed directly opposite each other.

7. The width conversion tool of claim 1 further comprising guide rollers disposed on an inner surface of said legs.

8. The width conversion tool of claim 1 further comprising guide rollers disposed on an inner surface of said legs and having one spindle which rotates about a fixed axis, said spindle having a lower raised surface and an upper raised surface;

said upper raised surface having a circular outer diameter;

said lower raised surface having a circular outer diameter which is smaller than the diameter of said upper raised surface;

having one crease roller which rotates about a fixed axis and which has a circular outer diameter; and

wherein said spindle and said crease roller are disposed directly opposite each other.

9. A method of forming a crease in a panel profile comprising the steps of:

providing a panel profile having a freely extending rear surface;

providing a width conversion tool having front and rear legs rigidly connected to each other at a top end, a gap formed between said front and rear portions, at least one raised surface disposed on either said front or rear leg, a portion of said raised surface extending into said gap, and at least one crease surface disposed on the leg opposite said at least one raised surface and located below the level of one of said at least one raised surface;

inserting the rear surface of the panel profile into the gap of the conversion tool so that said at least one crease surface is disposed adjacent an inner surface of the rear surface; and

moving said conversion tool along a outer edge of the rear surface.

10. A method of forming a crease in a rear surface flange of a drywall corner finishing device comprising the steps of:

providing a finishing device having two wings each having a front and rear surface, said front and rear surface having inner and outer edges, reinforcing structure extending between the front and rear surfaces of each of the two wings, the inner edges of the two wings being joined at a flexible joint extending along a longitudinal axis, the inner edges of the rear surface being spaced apart from each other outwardly of the flexible joint, the portions of said front and rear surfaces adjacent the outer edges of said front and rear surfaces being free of reinforcing structure, the outer portion of the rear surface forming a longitudinal hinge with the adjacent reinforcing structure whereby the rear surface flange of each wing may pivot rearwardly to receive drywall panels of different thickness;

providing a width conversion tool having front and rear legs rigidly connected to each other at a top end, a gap formed between said front and rear portions, at least one raised surface disposed on either said front or rear leg, a portion of said raised surface extending into said gap, and at least one crease surface disposed on the leg opposite said at least one raised surface and located below the level of one of said at least one raised surface;

inserting the rear surface of the finishing device into the gap of the conversion tool so that said at least one crease surface is disposed adjacent an inner surface of the rear surface flange; and

moving said conversion tool along the outer edge of the rear surface.

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