Manufacturers of Overhead Doors



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6555 Kestrel Road Mississauga, ON L5T 1P4 Phone: 905.564.3522 Fax: 905.564.3527 Toll Free: 1.800.465.7091 Attached please find a comparative spread sheet outlining 17 product specifications or attributes of overhead doors available in the market. The information contained in the spread sheet has been compiled from technical specifications obtained from the competitive company websites and is attached for your review.

The STEEL-CRAFT TD134 45mm door is a superior product to both the 45mm and 50mm commercial door competitors and it meets or exceeds 16 of the 17 comparative specifications. It provides superior value and offers a number of significant advantages over the competing 45mm and 50mm doors, as set out in greater detail below. In fact STEEL-CRAFT's TD134 45mm thick door exceeds the competitive 45mm and 50mm door products in the following 6 areas:

CFC & HCFC Free Polyurethane Insulation

STEEL-CRAFT is the only manufacturer to use polyurethane foam insulation which is CFC & HCFC free. This technology delivers zero ozone depletion potential and zero global warming potential making it the most environmentally friendly product choice. This is a significant environmental achievement and a reflection of our ongoing commitment to the environment.

Patented Mechanical Interlock - Thermal Break

This STEEL-CRAFT patented technology interlocks the front and back steel sections ensuring maximum strength from separation. This is a superior technology to that used by the 50mm door competitors who use chemical bonding. In addition, the STEEL-CRAFT thermal break technology reduces cold/heat conductivity and stops frost and moisture from collecting on the inside of the door.

Hardware Attachment Reinforcement

The 1 5/8" 20 Ga. TD 134 strip is designed to ensure maximum re-enforcement for hardware attachment. This is a significant product attribute which ensures that hardware components remain secure under all operating conditions. The 50mm door competitors use neither narrower strips or do not publish the specific size. It is also important to note that STEEL-CRAFT manufactures all their hardware components to ensure smoother operation of the complete door system. Many of our competitors manufacture only the door face and purchase the hardware components off-shore.

End Stiles

TD 134 offers higher Ga. steel (16 Ga. single end and 14 Ga. double end) end stiles compared to the 50mm doors.

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Standard Maximum Width

The TD 134 comes in a maximum standard width of 32', which provides flexibility in terms of meeting a wide variety of applications. (Note the 32' width may not be available in all heights due to maximum weight restrictions.)

Standard Maximum Height

The TD 134 comes in a maximum standard height of 28', which provides flexibility in terms of meeting a wide variety of applications. (Note the 28' height may not be available in all widths due to maximum weight restrictions.)

The only comparative category that the TD 134 door does not meet the 50mm door competition is the calculated R-value. It is important to point out that these figures are calculated values and do not represent actual complete door package tested results. For this reason, STEEL-CRAFT believes that it is unfair to classify the TD134 as "not equivalent" based on this single category. In addition, it is our opinion that the calculated R-value variance of a minimum of 1.55 to a maximum of 2.01 represents at best a negligible advantage especially when the other 16 comparative categories are considered and the advantages offered by the TD 134.

If you require any additional information, please do not hesitate to contact the nearest distribution center.

Product S	pecification	Compar	artive C	hart - 1 3/4"
		-		

Manufacturer	Upward Door	Richard Wilcox	Garaga G5000	STEEL-CRAFT	
Series Number	Thermal TX450	Theratite T175		THERM-O-DOR TD134	
Panel Thickness	44.5mm	45mm	45mm	45mm	
Limited Warranty	10 Year Limited	N/A	10 Year Rust	7 Year Limited	
			5 vear Delamination		
Hardware Spring	1 Year	1 Year	N/A	1 Year	
Warranty					
Insulation	Polyurethane	Polyurethane	Polyurethane	Polyurethane	
				. organotinano	
Type/ Foam	100% CFC free	CFC 11 Free	CFC Free	100% CFC & HCFC Free	
Process	Continuous	N/A	Injected	Continuous	
Calculated	R16.3	R16.4	R16	R16.04	
R-Value					
Thermal Break Between	Thermal Break	N/A	Inlaid	Thermal Break	
				Patented Mechanical	
				Interlock Interlocking	
exterior & interior skins	Chemically Bonded		Thermal Break	Front & Back Sections	
Section Seal	Bubble weather	Bubble weather	Extruded Thermal	Extruded Thermal	
	Soal	Soal	Brook	Brook	
Gauge Steel Skin	26/26	24/24	26/26	26/26	
(autorior/intorior)					
Steel Thickness	017/017	016/016	016/016	017/017	
		See DASMA			
(min exterior / interior)		TDS #154			
Hardware Attachment	Two Continuous	N/A	14 Ga. Size not	Two Continuous	
Reinforcement	1-1/4" 20Ga Strips		published	1 5/8" 20 Ga.Strips	
End Stiles	20 Ga. Galvanized	Ga. Not available	Wood Block	16 Ga. Galvinized(Sgl.)	
	(Std.)				
Coloro Availabla	16 Ga. Available	W/bito	Wht/Prn/Sand/Clay	14 Ga. Galvinized(Dbl.)	
	VVIIILE / DIOWII	vvnite	WIII/DIII/Sanu/Clay	White / Drown	
Panel Appearance	Shallow	Shallow	Shallow	Shallow	
(Texture)	Horizontal Ribs	Horizontal Ribs	Horizontal Ribs	Horizontal Ribs	
Standard Maximum	28' 0"	25' 2"	29'6"	32' 2"	
Width Standard Maximum		4.01.4.	0.41.01	001.0"	
	20 0	10 1	24 3	28 0	
Insulated Windows	Sealed Units	Sealed Units	Sealed Units	Sealed Units	
		34" X16"	21" x13" 26"x13" 30	23" x 7" 24" x 12"	
	18" x 8" or 24" x 12"	24" x 12" 24" x 8"	x 13"	.34" x 16"	
Full View Aluminum	Available	Available	Available	Available	
Sections					
High Wind Load	Contact for Details	N/A	Contact for Details	Contact for Details	
Available					
High Wind Load	Contact for Details	N/A	Contact for Details	Contact for Details	
Available				<u> </u>	

	i i ouuci ope	cincation of	mpararuve C		
Manufacturer	Upward Door	Richard Wilcox	Wayne Dalton	STEEL-CRAFT	
Series Number	Thermal TX500	Theratite T200	Thermospan 200	THERM-O-DOR TD134	
Panel Thickness	50mm	50mm	50mm	45mm	
Limited Warranty	10 Year Limited	N/A	10 year / 7 year	7 Year Limited	
			Limited		
Hardware Spring	1 Year	1 Year	1 Year	1 Year	
Warranty					
Insulation	Polyurethane	Polyurethane	Polyurethane	Polyurethane	
Turne (Feering	100% CEC from				
rype/ Foam		CFC IT Flee	CFC FIEE	100% CFC & HCFC Free	
Process	Continuous	N/A	Continuous	Continuous	
Calculated	R18.4	R18.5	R17.59	R16.04	
R-Value					
Thermal Break Between	Thermal Break	N/A	Thermal Break	Thermal Break	
				Patented Mechanical	
				Interlock Interlocking	
exterior & interior skins	Chemically Bonded			Front & Back Sections	
Section Seal	Bubble weather	Bubble weather	Extruded Thermal	Extruded Thermal	
		0	Durali	Durali	
Gauge Steel Skin	Seal 26/26	Seal 24/24		Break 26/26	
	20/20			20/20	
(exterior/interior)	017/017	Actual 26Ga.	015/015	017/017	
Steel Mickness	.0177.017		.015/.015	.0177.017	
		See DASIMA			
(min.exterior / interior) Hardware Attachment	Two Continuous	TDS #154	20 Ga. Size not	Two Continuous	
	r wo continuous			rwo continuous	
Reinforcement	1-1/4" 20Ga Strips		published	1 5/8" 20 Ga Strips	
End Stiles	20 Ga. Galvanized	Ga. Not available	18 Ga. Galvanized	16 Ga. Galvinized(Sgl.)	
	(Std.)		(Std.)		
	16 Ga. Available		16 Ga. Available	14 Ga. Galvinized(Dbl.)	
Colors Available	White / Brown	White	White	White / Brown	
Panel Appearance	Shallow	Shallow	Shallow	Shallow	
(Texture)	Horizontal Ribs	Horizontal Ribs	Horizontal Ribs	Horizontal Ribs	
Standard Maximum	28' 0"	25' 2"	N/A	32' 2"	
Width					
Standard Maximum	20' 0"	18' 1"	N/A	28' 0"	
Height	O a alla al Llucita			O a a la al Lla ita	
insulated windows	Sealed Units	Sealed Units	Sealed Units		
		34" X16"		23" x 7" 24" x 12"	
	18" x 8" or 24" x 12"	24" x 12" 24" x 8"	24" x 6"	34" x 16"	
	INOT AVAIIADIE	INOT AVAIIADIE	Available	Available	
Sections					
High Wind Load	Contact for Details	N/A	Contact for Details	Contact for Details	
Available					

Product Specification Comparartive Chart 2"



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DASMA Steel Gauge Chart

The members of DASMA recognize that equating actual steel thickness to steel gauge for various building products can be quite confusing, particularly when there may be inconsistency in actual steel thicknesses for identical gauges for different building products.

The DASMA Steel Gauge Chart was created by DASMA's Commercial & Residential Garage Door Technical Committee to give minimum steel thicknesses, in inches, for steel gauges ranging from 8 to 30. Unpainted surfaces without galvanizing, as well as common galvanizing weights, are accounted for in the table. The chart is most applicable to the steel sheeting used in garage door sections.

Note: Technical Data Sheets are information tools only and should not be used as substitutes for instructions from individual manufacturers. Always consult with individual manufacturers for specific recommendations for their products and check the applicable local regulations.

This Technical Data Sheet was prepared by the members of DASMA's Commercial & Residential Garage Door Division Technical Committee. DASMA is a trade association comprising manufacturers of rolling doors, fire doors, grilles, counter shutters, sheet doors, and related products; upward-acting residential and commercial garage doors; operating devices for garage doors and gates, sensing devices, and electronic remote controls for garage doors and gate operators; as well as companies that manufacturer or supply either raw materials or significant components used in the manufacture and installation of the Active Members' products.

10/9/03 Rev 4/08 Page 1 of 2 This sheet is reviewed periodically and may be updated. Visit www.dasma.com for the latest version.

COMMERCIAL & RESIDENTIAL GARAGE DOOR DIVISION TECHNICAL DATA SHEET 154

DASMA Steel Gauge Chart						
GAUGE NO.	Bare	G-10	G-30	G-40	G-60	G-90
8	0.1584	0.1586	0.1589	0.1591	0.1594	0.1599
10	0.1285	0.1287	0.1290	0.1292	0.1295	0.1300
11	0.1136	0.1138	0.1141	0.1143	0.1146	0.1151
12	0.0986	0.0988	0.0991	0.0993	0.0996	0.1001
13	0.0847	0.0849	0.0852	0.0854	0.0857	0.0862
14	0.0697	0.0699	0.0702	0.0704	0.0707	0.0712
15	0.0623	0.0625	0.0628	0.0630	0.0633	0.0638
16	0.0548	0.0550	0.0553	0.0555	0.0558	0.0563
17	0.0498	0.0500	0.0503	0.0505	0.0508	0.0513
18	0.0438	0.0440	0.0443	0.0445	0.0448	0.0453
19	0.0388	0.0390	0.0393	0.0395	0.0398	0.0403
20	0.0329	0.0331	0.0334	0.0336	0.0339	0.0344
21	0.0299	0.0301	0.0304	0.0306	0.0309	0.0314
22	0.0269	0.0271	0.0274	0.0276	0.0279	0.0284
23	0.0239	0.0241	0.0244	0.0246	0.0249	0.0254
24	0.0209	0.0211	0.0214	0.0216	0.0219	0.0224
25	0.0179	0.0181	0.0184	0.0186	0.0189	0.0194
26	0.0159	0.0161	0.0164	0.0166	0.0169	0.0174
27	0.0144	0.0146	0.0149	0.0151	0.0154	0.0159
28	0.0129	0.0131	0.0134	0.0136	0.0139	0.0144
29	0.0115	0.0117	0.0120	0.0122	0.0125	0.0130
30	0.0100	0.0102	0.0105	0.0107	0.0110	0.0115
JOTES: 1. Chart shows unpainted thickness minimums (in inches) per gauge number and several common galvanizing weights.2. References: ASM Metals Reference Book, Third Edition, 1993; The Making, Shaping and Treating of Steel, AISE.						

1985; ASTM A568 / A568M - 07a; ASTM A924 / A924M-07.

3. Bare steel thicknesses represent steel without the addition of galvanizing.

Note: Technical Data Sheets are information tools only and should not be used as substitutes for instructions from individual manufacturers. Always consult with individual manufacturers for specific recommendations for their products and check the applicable local regulations.

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10/9/03 Rev 4/08 Page 2 of 2 This sheet is reviewed periodically and may be updated. Visit www.dasma.com for the latest version.

Manufacturers of Overhead Doors



STANDARD SPECIFICATIONS FOR STEEL-CRAFT DOOR PRODUCTS THERM-O-DOR[®] -- Models TD134 & TD138

PART 1: GENERAL

1.01 WORK INCLUDED:

Doors shall be sectional overhead type THERM-O-DOR[®] TD134 or TD138 as manufactured by Steel-Craft Door Products Ltd. Each door shall be supplied as one complete unit including sections, track, brackets, rollers, struts, counterbalance mechanisms, hardware (list options) to suit the opening and headroom available.

1.02 RELATED WORK:

Opening preparation, miscellaneous or structural metal work, access panels, finish or field painting, field electrical wiring, wire, conduit, fuses, and disconnect switches are in the Scope of Work for other divisions or trades.

PART 2: PRODUCT

2.01 DOOR SECTIONS

Will be roll formed of hot dipped galvanized stucco embossed steel. Sections will be manufactured by a continuous foamed-in-place polyurethane lamination process resulting in a steel- polyurethane-steel sandwich type construction. Steel-Craft Door Products Ltd. utilizes Doffasco, "PREMIER" Galvanized minimized spangle sheet "Pre-coat" commercial steel for the THERM-O-DOR® model TD134 & TD138 polyurethane foam injected door as per the following specification.

Galvanized sheet steel:

Commercial steel to ASTM A525/A525M Z001 G01 zinc coating.

Thickness:

0.0155

Each section will be 1 3/4" (TD134) or 1 3/8" (TD138) thick providing a calculated R-Value of 16.04 & R12.6 respectively in accordance with industry established guidelines. THERM-O-DOR® sections incorporate a mechanical interlock feature providing a positive mechanical lock on the exterior and interior skins, which also acts as a thermal break. Skins of sections will be ribbed for added strength and utilize ship-lap joints with continuous applied joint seal for weather-tight fit. End caps will be of 16 ga. hot-dipped galvanized steel for the TD134, and 20 Ga. galvanized, prepainted steel for the model TD138. Bottom section is provided with a "U" shaped all weather vinyl seal to conform to small variations in the floor surface.

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2:02 HARDWARE

Galvanized hardware to include, graduated end roller hinges, intermediate hinges, adjustable top roller brackets, and bottom fixtures that have cable adjustment, 2" and 3" rollers to have 10 floating ball bearings in case hardened steel races. Doors shall be adequately reinforced with galvanized steel struts as required. Doors 14' wide and over receive the new Steel-Craft Thermal Bow Strap (patent pending) to reduce thermal bowing caused by excessive temperature differentials between the exterior and interior door skins. Double end stiles supplied with two pairs of end roller hinges on doors over 17' wide. Long-stem roller shafts to extended fully through end roller hinges. Include double top fixtures.

Doors over 24' 2" in width shall be reinforced with 6" x 16 gauge "Z" shaped struts. (One per section) All doors over 1000 lbs. shall incorporate 11 Ga. end hinges. Doors over 1300 lbs. shall be equipped with extra heavy duty top and bottom roller brackets, which accept 5/8" roller shafts.

2.03 TRACK

2" or 3" steel track as required. Vertical tracks to be minimum 16 ga. galvanized steel; tapered and mounted for wedge-type closing. Horizontal tracks to be minimum 14 ga. galvanized steel. Vertical tracks to be bracket mounted or continuous angle mounted and fully adjustable for sealing door to jamb. Horizontal track to be adequately reinforced with C-channel.

2.04 SPRING COUNTERBALANCE

Heavy duty oil-tempered torsion springs on continuous ball bearinged cross header shaft (solid or tubular shafts as required by size and operation). Cable drums and spring fittings will be made of die-cast high-strength aluminum. Galvanized aircraft quality steel 7 x 19 cable shall provide a minimum 7-1 safety factor. 1/4" cable shall be used on all doors over 1000 lbs. (Long-life springs of 25,000, 50,000, or 100,000 cycles may be specified and are recommended for high usage doors).

Doors over 1300 lbs. utilize 1 1/4" cross header shafts with standard bearings.

Doors over 1600 lbs. utilize 1 1/4" cross header shafts with greasable end bearings in cast iron housings mounted to extra heavy bearing plates.

2.05 WINDLOAD

Doors will be designed to meet or exceed industry standard for windloads (Door and Access Manufacturers Association - DASMA).

2.06 LOCK

Interior mounted (left or right side) spring-loaded side bolt lock shall engage in track. (Optional 5 pin tumbler security side lock, or double bar latch). Master keyed cylinders, if required, to be supplied by others.



2.07 WEATHERSTRIP

Bottom weatherstrip will be "U" shape all weather seal. Between sections will have a continuous applied joint seal.

2.08 FINISH

Finish: QC456 Prime coat

QC4654 Finish coat exterior polyester 42-62292-03204

The finish will be two coat baked on polyester with a white interior and white (brown) exterior.

2.09 GLAZING

Single or Sealed Thermo units in Glass, Lexan etc.

2.10 OPERATION

Hand chain hoist recommended for doors over 12' high or electrical motor operated.

2.11 OPTIONS

Pass Doors, Removable centre post, high wind load conditions, special colors, fail safe bottom roller brackets, track guards, etc.

PART 3: EXECUTION

3.01 INSTALLATION

Install the doors in accordance with Steel-Craft instructions and standards using an authorized Steel-Craft Door Products representative.

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TD134 THERM-O-DOR SECTION VIEW

SCALE: NTS

FILE: TD134IMN



TD138 THERM-O-DOR SECTION VIEW

SCALE: NTS

FILE: TD138IMN



TD13420 THERM-O-DOR SECTION VIEW

SCALE: NTS

FILE: TD13420IMN



United States Patent [19]

Mihalcheon

[54] COMPOSITE PANEL HAVING INTERLOCKED SKINS AND A BONDED FOAM CORE

- [75] Inventor: Arthur A. Mihalcheon, Edmonton, Canada
- [73] Assignce: Steel-Craft Door Products Ltd., Alberta, Canada
- [21] Appl. No.: 346,894
- [22] Filed: Nov. 30, 1994
- [51] Int. Cl.⁶ E04C 2/292

[56] References Cited

U.S. PATENT DOCUMENTS

4,123,885	11/1978	Scott 52/802 X
4,183,393	1/1980	Bailey 52/309.11 X

[11] **Patent Number:** 5,533,312

[45] **Date of Patent:** Jul. 9, 1996

4,441,301 4/1984 Benson 52/804 4,589,240 5/1986 Kendall et al. .

Primary Examiner—Carl D. Friedman Assistant Examiner—Christopher Todd Kent Attorney, Agent, or Firm—Sheridan Ross & McIntosh

[57] ABSTRACT

A unitary, insulated panel is provided for use in sectional doors and walls. The panel comprises opposed, spaced apart, parallel, inner and outer metal skins. The skins are mechanically interlocked along their top and bottom ends by integral, inwardly projecting flanges having mutually engaged, hookshaped terminal portions. The opposed flanges at each end are coplanar. The engaged hook-shaped terminal portions combine to form a longitudinally extending slot. The mouth of the slot is narrow relative to its bulbous inner portion. A strip of weather seal can be inserted longitudinally into the slot, for sealing purposes. Foamed polyurethane is formed in situ in the space between the skins. The polyurethane bonds to the skins. A rigid, strong panel unit is obtained by the combination of mechanically interlocking the skins and bonding them with the core.

3 Claims, 3 Drawing Sheets









Fig. 3.

5

50

COMPOSITE PANEL HAVING INTERLOCKED SKINS AND A BONDED FOAM CORE

FIELD OF THE INVENTION

The present invention relates to a unitary insulated panel for use in sectional doors and curtain walls. The panel comprises spaced apart inner and outer metal skins bonded to an internal core of plastic foam and mechanically interlocked by hook means at their top and bottom ends.

BACKGROUND OF THE INVENTION

Insulated panels are commonly used in sectional garage 15 doors, curtain walls and the like.

Commonly, such panels utilize parallel, opposed, spacedapart steel skins separated by a core of plastic foam. The foam is formed in situ and is bonded with the skins. The top and bottom marginal portions of the skins are bent inwardly ²⁰ to form perpendicular flanges. These flanges usually have an L configuration, so that the inner leg of the L extends parallel to the main plane of the skins. This parallel leg is buried in the foam core. The buried legs of the two flanges associated at one end of the panel are positioned in spaced apart ²⁵ relationship, to create a thermal break. Thus heat or cold affecting the exposed metal outer skin does not have a conductive connection with the inner skin.

A problem associated with such prior art panels is that the integrity of the panel depends on the adhesion between the ³⁰ metal skin and the plastic core. The panels can fall apart when the skin and core begin to separate in use.

U.S. Pat. No. 4,589,240, issued to Kendall et al., discloses a panel in which the associated flanges at top and bottom are formed to provide hook-shaped terminal portions. These hook means are engaged to mechanically interlock the skins. A thermal break is provided at each joint formed by the hook means. More particularly, an elongate vinyl element having a double C configuration is provided to fit like a sock over 40 one of the hook means. The vinyl element includes a bead at an outer end spaced from the hook means, for serving as a weather seal. The core is pre-formed, rather than being foamed in-situ. This is done in part so that the skins can be pressed together to bring the hooks into engagement while 45 compressing the core. The core then expands, when pressure is released, to "set" the hooks.

SUMMARY OF THE INVENTION

The present invention involves forming a panel so as to interconnect the skins both by a mechanical interlock using hook means and by bonding to a plastic core that has been foamed in situ.

The hook means are preferably formed so as to create an ⁵⁵ elongated, open-mouthed slot extending longitudinally of the top and bottom edges of the panel. The mouth of each slot is narrow relative to its inner portion, which is bulbous in configuration. An elongated strip of weather seal can be provided to seat in and be held by the walls of the slot, said ⁶⁰ strip protruding from the slot to seal against the abutting surface of the next panel.

In another preferred feature, the skins are roll formed so that the hooks of the hook means are overlapping and engaged but they remain out of physical contact. Thus a thin 65 air gap exists between each associated pair of hook means to provide a thermal break. If the plastic bond begins to fail and the skins move apart, the hook means are brought into contact and prevent further separation of the skins.

In another preferred feature, the flanges are each comprised of a leg portion and a hook means at the terminal end of the leg portion. The leg portions of opposed flanges are arranged to be substantially coplanar when assembled.

The main advantage of the invention is that a panel is provided having a high degree of cohesion and structural strength.

DESCRIPTION OF THE DRAWINGS

FIG. 1a is an end view showing the flanges on one side of the panel skins in the course of engaging the hook means;

FIG. 1b is an end view showing the other side of the panel, with the hook means engaged and the space between the skins filled with plastic foam, which is adhesively bonded to the skins;

FIG. **2** is an end view showing the top and bottom portions of two abutting panels, with a foamed plastic weather seal, formed in situ, in place in one slot; and

FIG. 3 is an end view of a complete panel showing a rubber weather seal at one end.

DESCRIPTION OF THE PREFERRED EMBODIMENT

During fabrication, a pair of horizontal, parallel, opposed, spaced apart, thin steel strips or top and bottom "skins" **1**,2 are fed longitudinally through a roll-forming assembly (not shown). These top and bottom skins become "inner" and "outer" skins when the finished panel is positioned on edge in use. The panel will be described as if it is horizontal.

The marginal side portions of each skin 1,2 are bent inwardly, partly doubled back and formed to produce generally perpendicular flanges 3,4 and 5,6 having elongated hook means 7,8 and 9, 10 extending along their inner edges. The pair of flanges on each skin have hook means opening in opposite directions. Thus each pair of opposed top and bottom hook means on one side of the two skins are oppositely directed.

Each hook means 7.8 of the top skin 1 is formed in the shape of a flat and wide bottomed U, to provide a bulbous, narrow mouthed channel or slot 17, having a hook member 11 at its inner end.

The opposed pairs of hook means 7,9 and 8, 10 are adapted, when engaged, to overlap and mechanically interlock to hold the skins 1,2 together along their side edges.

When the top and bottom hook means 7.8 and 9, 10 are engaged, a narrow gap 12 is preferably left between their engaged portions. These air gaps 12 function as thermal breaks between the skins 1.2.

Engagement of each opposed pair of hook means 7,9 and 8,10 is achieved by bowing the top flange sideways (see FIG. 1*a*), with the skins 1,2 spaced relatively far apart, and then bringing the skins closer together and releasing the bowed flange so that it springs back toward the bottom flange and the top and bottom hook means engage. See FIG. 1*b*.

Before the skins are roll-formed, the ingredients for generating polyurethane foam are centrally deposited on the inner surface 15 of the bottom skin 2. After roll-forming and engagement of the hook means, the strips 1,2 form a space 13 between them, closed along its sides by the engaged flanges. Upon curing with heat, the ingredients foam and

produce a core 16. This foam core fills the space 13 and contacts and bonds to the inner faces 14, 15 of the skins 1,2.

The resulting product at the end of fabrication is a unitary insulated panel of generally rectangular form. It comprises flanges having hook means engaged along each of its sides, ⁵ to provide side closure and a mechanical interlock for holding the skins together. The interior space of the panel is filled with a foam core which is bonded to the skins. Each pair of opposed flanges combine to form a slot, having a narrow mouth and bulbous space **19**, extending along each ¹⁰ side edge of the panel.

A strip 18 of rubber weather stripping may be threaded into a slot 17, to protrude therefrom and seal against an abutting panel. Alternatively, a bead 18a of plastic can be deposited in the slot and foamed in situ to fill the bulbous ¹⁵ space 19 and protrude through the mouth 20 of the slot 17.

What is claimed is:

1. A unitary insulated panel having top and bottom sides and being of rectangular form, comprising:

inner and outer metal skins arranged in opposed and spaced apart relationship so that a space is formed between them, each skin having an inner face and top and bottom inwardly projecting flanges, the top flanges being opposed and forming the top side of the panel, the bottom flanges also being opposed and forming the bottom side of the panel;

- each opposed pair of flanges forming oppositely directed hook means which overlap and engage to mechanically interlock the skins;
- each pair of overlapping and engaged hook means combining to form a slot, extending longitudinally of the side of the panel, said slot having a relatively narrow mouth and a bulbous inner section so that an elongate strip of weather seal can be retained in the slot and protrude through the mouth thereof to seal against an abutting panel; and
- a foam core, having been formed in situ within the space between the skins, said core filling the space and being bonded to the inner faces of the skins.

2. The panel as set forth in claim 1 wherein each flange comprises a leg portion and the hook means, the leg portions of opposed flanges being generally coplanar.

3. The panel as set forth in claim 1 or 2 wherein the engaged hook means are spaced apart to form a thermal break of insulating air therebetween.

* * * * *









<u>SECTION VIEW</u> (STANDARD LIFT TRACK) scale: nts file: slsec



SECTION VIEW (STANDARD LIFT TRACK)



<u>SECTION VIEW</u> (HI-LIFT TRACK) scale: nts file: hlsec





SEC SCALE: NTS FILE: LHRSECF \TORSION SPRINGS FRONT MOUNT VIEW DOUBLE TRACK LOW HEADROOM











CONTINUOUS ANGLES MOUNT - STEEL JAMB



CONTINUOUS ANGLES MOUNT - WOOD JAMB



CONTINUOUS REVERSED ANGLE MOUNT - STEEL JAMB















SLIDING CENTER POST - STEEL JAMB





SECTION DETAILS Scale: NTS FILE: SA7000SECT