

Search history

Search 1: FT=((bending mold) and (female mold) and (male mold)) (Results 67)

Title: METHOD FOR BENDING A GLASS SHEET AND APPARATUS THEREFOR

Abstract: There are a preliminarily bending step for putting heated and softened glass sheet on a preliminarily bending supporting-frame, the glass sheet having an edge portion supported by the preliminarily bending supporting-frame, and for bending the glass sheet into a desired preliminarily bent shape while putting the glass sheet on the preliminarily bending supporting-frame; and a finally bending step for transferring the preliminarily bent glass sheet on a finally bending supporting-frame, the glass sheet having an edge portion supported by the finally bending supporting-frame, and for bending the glass sheet into a final bent shape by pressing the glass sheet against a bending surface of a finally **bending mold** while putting the glass sheet on the finally bending supporting-frame.

Classifications:

International (IPC 8-9): C03B23/023 C03B23/025 C03B23/027

C03B23/03 C03B23/035 C03B35/14 C03B35/16

C03B35/20 (Advanced/Invention);

C03B23/02 C03B35/00 (Core/Invention)

International (IPC 1-7): C03B23/023 C03B23/025 C03B23/027

C03B23/03 C03B23/035 C03B35/16

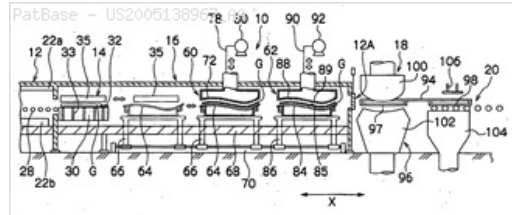
CPC: Y02P40/57 C03B23/0305 C03B23/03 C03B23/0357 C03B35/145

C03B35/202 C03B2225/02

European: C03B23/03 C03B23/035B C03B23/035B3 C03B23/03C

C03B35/14C C03B35/20B M03B225/02

US: 65/106 65/287



Family:

Publication number	Publication date	Application number	Application date
■ CN1648083 A	20050803	CN200410061569	20041227
■ CN1648083 B	20120425	CN200410061569	20041227
■ EP1550639 A1	20050706	EP20040030337	20041221
■ JP2005206458 A2	20050804	JP20040371617	20041222
■ US2005138967 AA	20050630	US20040017968	20041222

Priority:

JP20030433533 20031226 JP20040371617 20041222

Probable Assignee: ASAHI GLASS CO LTD

Assignee(s): (std): ASAHI GLASS CO LTD

Assignee(s): ASAHI GLASS COMPANY LIMITED ; ASAHI GLASS CO

Inventor(s): (std): FUKAMI MASAO ; HORI JUNJI ; HORI JUNSHI ; JUNJI HORI ; KAZUSHIGE YODA ; KITAJIMA YUTAKA ; MASAO FUKAMI ; YODA KAZUNARI ; YODA KAZUSHIGE ; YUTAKA KITAJIMA

Agent(s): OBLON SPIVAK MCCLELLAND MAIER AND NEUSTADT PC

Designated states: AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LU MC NL PL PT RO SE SI SK TR

Title: Glass shaping mold

Abstract: A glass shaping mold includes a **female mold** member having a shaping surface, a **male mold** member having a shaping surface complementary to the shaping surface of the **female mold** member, and a felt sheet disposed on each of the shaping surfaces. The female and **male mold** members are movable toward each other to shape a heat-softened glass object between the felt sheets on the shaping surfaces.

Classifications:

International (IPC 8-9): C03B11/00 C03B11/06 C03B11/08 C03B23/023 C03B23/031 C03B40/00 (Advanced/Invention);

C03B11/00 C03B11/06 C03B23/02 C03B40/00 (Core/Invention)

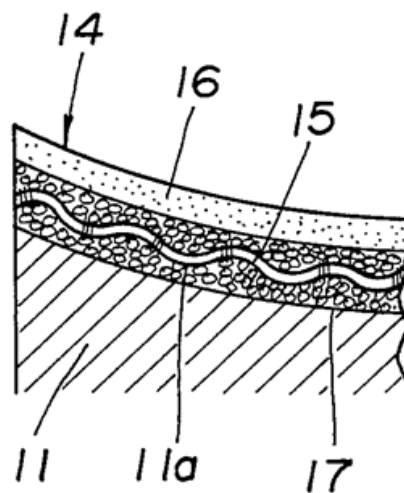
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CPC: C03B40/005 C03B23/023 C03B23/031

European: C03B23/023 C03B23/031 C03B40/00 C03B40/00F

US: 65/106 65/273 65/287 65/374.11 65/374.13

PatBase - US4678495_A



Family:

Publication number	Publication date	Application number	Application date
CA1275571 A1	19901030	CA19850496118	19851125
DE3541773 A1	19860528	DE19853541773	19851126
DE3541773 C2	19900118	DE19853541773	19851126
FR2573749 A1	19860530	FR19850017405	19851125
FR2573749 B1	19921023	FR19850017405	19851125
GB2168339 A1	19860618	GB19850029036	19851126
GB2168339 B2	19880720	GB19850029036	19851126
GB8529036 A0	19860102	GB19850029036	19851126
JP1597006 C3	19910128	JP19840248967	19841126
JP2023487 B4	19900524	JP19840248967	19841126
JP61127628 A2	19860614	JP19840248967	19841126
US4678495 A	19870707	US19850801786	19851126

Priority:

JP19840248967 19841126 CA19850496118 19851125

Probable Assignee: NIPPON SHEET GLASS CO LTD

Assignee(s): (std): NIPPON SHEET GLASS CO LTD

Assignee(s): NIPPON SHEET GLASS CO LTD OSAKA JP ; YOSHIZAWA HIDEO ; NIPPON SHEET GLASS CO

Inventor(s): (std): YOSHIZAWA HIDEO

Inventor(s): YOSHIZAWA HIDEO KAWASAKI KANAGAWA JP ; HIDEO YOSHIZAWA

Agent(s): MARKS AND CLERK

Title: Method of and apparatus for bending and tempering thin glass sheets

Abstract: A method of and apparatus for bending and tempering a relatively thin glass sheet while supported horizontally and conveyed along a generally horizontal path comprising heating the glass sheet to its softening point, bending the sheet into the desired curvature, reorienting the bent sheet for further processing along said horizontal path, reheating the sheet to the temperature necessary for proper tempering, and finally, chilling the sheets rapidly below the annealing temperature range of the glass.

Classifications:

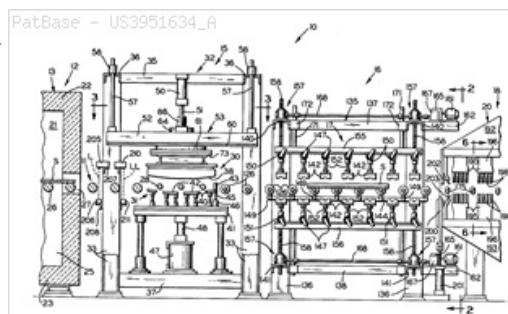
International (IPC 8-9): C03B23/03 C03B23/035 C03B27/00 C03B27/044 C03B29/08 C03B35/18 C03B35/20 (Advanced/Invention); C03B23/02 C03B27/00 C03B29/00 C03B35/00 (Core/Invention)

International (IPC 1-7): C03B23/02 C03B23/03 C03B27/00 C03B35/00 C03B35/14

CPC: C03B23/0305 C03B23/0357 C03B27/0445 C03B29/08 C03B35/202 C03B40/005 C03B2225/02

European: C03B23/03 C03B23/035B C03B23/035B3 C03B23/03C C03B27/044B2 C03B29/08 C03B35/20B C03B40/00F

US: 65/104 65/114 65/273 65/349



Family:

Publication number	Publication date	Application number	Application date
AR204453 A1	19760206	AR19750259267	19750101
AU197581838 A1	19761209	AU19750081838	19750604
BE830428 A	19751016	BE19750157496	19750619
BR7503833 A	19760706	BR19750004929	19750618
CA1064261 A1	19791016	CA19750228251	19750602
DE2526787 A1	19760108	DE19752526787	19750613
ES438603 A1	19770616	ES19750438603	19750616
FI58624 B	19801128	FI19750001748	19750612
FI58624 C	19810310	FI19750001748	19750612
FI751748 A	19751221	FI19750001748	19750612
FR2275413 A1	19760116	FR19750019222	19750619
FR2275413 B1	19820716	FR19750019222	19750619
GB1483279 A	19770817	GB19750024058	19750604
IT1036981 A	19791030	IT19750050037	19750612
JP1169846 C3	19831017	JP19750075413	19750620
JP51017208 A2	19760212	JP19750075413	19750620
JP58003978 B4	19830124	JP19750075413	19750620
LU72774 A	19751008	LU19750072774	19750619
NL7506878 A	19751223	NL19750006878	19750610
SE413311 B	19800519	SE19750007107	19750619
SE413311 C	19800904	SE19750007107	19750619
SE7507107 A	19751222	SE19750007107	19750619
SE7507107 L	19751222	SE19750007107	19750619
US3951634 A	19760420	US19740481307	19740620
ZA7503593 A	19760526	ZA19750003593	19750603

Priority:

US19740481307 19740620

Probable Assignee: LOF GLASS INC

Assignee(s): (std): LIBBEY OWENS FORD CO

Assignee(s): LOF GLASS INC ; LIBBEY OWENS FORD COMPANY ; LIBBEY OWENS FORD CY ; LIBBEY OWENS FORD CO ; LIBBEY OWENS FORD COMPANY TE TOLEDO OHIO VER ST V ; LIBBEY OWENS FORD COMPANY TE TOLEDO OHIO VER ST V AM ; REVELLS ROBERT G ; RAHRIG DONALD D ; RIBEI OENSU FUOODO CO ; HALL HAROLD R ; HERRINGTON RICHARD A ; HUIZINGA MARTIN

Inventor(s): (std): HALL HAROLD R ; HALL HAROLD ROMAINE ; HERRINGTON RICHARD A ; HERRINGTON RICHARD ALVIN ; HUIZINGA MARTIN ; RAHRIG DONALD D ; RAHRIG DONALD DALE ; REVELLS ROBERT G ; REVELLS ROBERT GENE ; TOLEDO OHIO ; ROBAATO JIIN REBERUSU ; RICHAAO ARUBIN HAARINTON ; REVELLS R G ; RAHRIG D D ; MAACHIN HOIJINGA ; HERRINGTON R A ; HARORUDO ROOMEIN HOORU ; HALL H R ; DONARUDO DEERU RAARITSUGU ; REVELLS R ; RAHRIG D ; HALL H ; HUIZINGA M ; HERRINGTON R

Inventor(s): HAROLD ROMAINE HALL ; H R HALL ; GENE REVELLS ROBERT ; DONALD DALE RAHRIG ; DALE RAHRIG DONALD ; D D RAHRIG ; ALVIN HERRINGTON RICHARD ; ROMAINE HALL HAROLD ; ROBERT GENE REVELLS ; RICHARD ALVIN HERRINGTON ; R G REVELLS ; R A HERRINGTON ; MARTIN HUIZINGA ; M HUIZINGA

Title: METHOD OF FORMING AN INSULATED SHAPING SURFACE ON A **BENDING MOLD**

Abstract: ABSTRACT OF THE DISCLOSURE A mold for bending glass sheets that is made up of a rigid part having a surface conforming generally in contour to the curvature desired in a finished bent glass sheet, an insulating refractory cover on this generally conforming surface that has an exposed surface that accurately conforms to the desired curvature, and a layer of adhesive providing a compensating "glue line" between the rigid part and the cover; together with a method of producing such covered mold parts which involves supporting a flexible refractory cover with its supported surface accurately conforming to the desired curvature, applying a silicone polymer to the unsupported surface, pressing the generally conforming rigid mold part into and then curing the polymer.

Classifications:

International (IPC 8-9): C03B23/03 (Advanced/Invention);
C03B23/02 (Core/Invention)

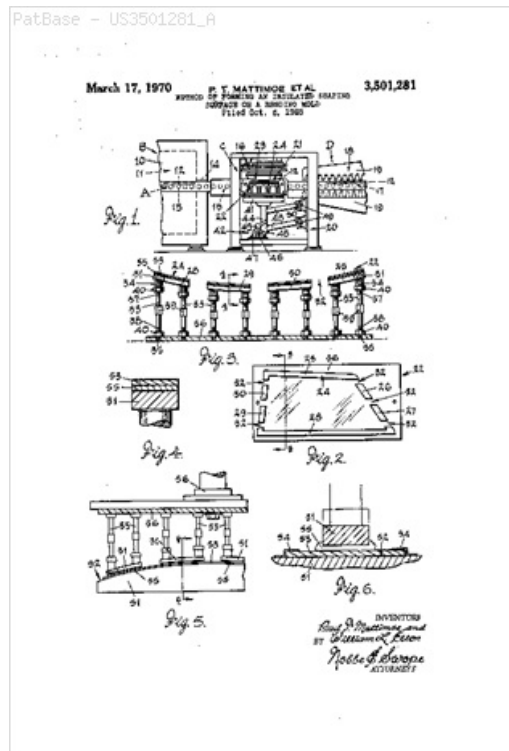
International (IPC 1-7): C03B23/02 C03B23/03 C03C27/10

CPC: C03B23/0302 Y10T156/1028 C03B23/03 C03B2225/02

European: C03B23/03B M03B225/02

US: 156/212 156/329 65/102 65/288

PatBase - US3501281_A



Family:

Publication number	Publication date	Application number	Application date
BE687757 A	19670403		19661003
DE1596500 A1	19710304	DE1966L054736	19661006
DE1596500 B2	19760513	DE1966L054736	19661006
DE1596500 C3	19761223	DE1966L054736	19661006
ES331973 A1	19670716	ES19660331973	19661005
FR1495977 A	19670922	FR19660079011	19661006
GB1159989 A	19690730	GB19660043232	19660928
JP49013608 B4	19740402	JP19660065900	19661006
LU52096 A	19661004		19661004
NL6614110 A	19670407	NL19660014110	19661006
US3501281 A	19700317	US19650493408	19651006

Priority:

US19650493408 19651006 FR19660079011 19661006

Probable Assignee: LOF GLASS INC

Assignee(s): (std): LIBBEY OWENS FORD GLASS CO ; LIBBY OWENS FORD GLASS CO

Assignee(s): LOF GLASS INC ; LIBBEY OWENS FORD GLASS COMPANY

Inventor(s): (std): ELTON WILLIAM L ; LOWELL ELTON WILLIAM ; MATTIMOE PAUL T ; TIMOTHY MATTIMOE PAUL ; MATTIMOE PAUL TIMOTHY ; ELTON WILLIAM LOWELL

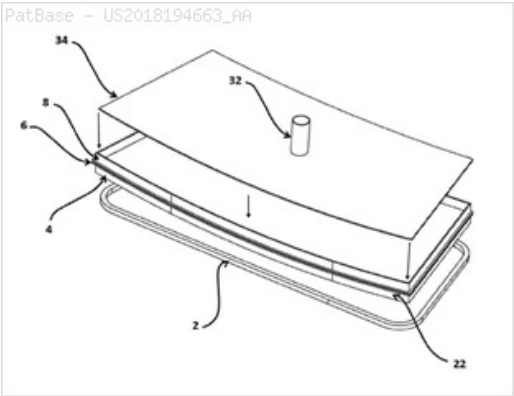
Inventor(s): WILLIAM L ELTON ; PAUL T MATTIMOE

Title: METHOD AND APPARATUS FOR BENDING THIN GLASS

Abstract: The present invention provides for a method and apparatus for bending multiple sheet of thin glass at the same time on a single set of molds. Multiple sheets of thin glass are stacked onto a full surface **female mold**. A partial surface **male mold** is placed onto the thin glass stack. The **male mold** serves to hold the edges in place and prevents the formation of wrinkles as the glass is heated and sags to conform to the shape of the **female mold**. Optionally, the top mold can be enclosed and pressurized to provide a pneumatic pressure assist to form the glass. In addition, the bottom mold can be enclosed to allow for vacuum assist to form the glass.

Classifications:

International (IPC 8-9): C03B23/025 C03B23/03 C03B23/035 C03B27/012 C03C23/00 G01L5/00 (Advanced/Invention)
CPC: C03B23/0256 C03B23/0305 C03B23/0352 C03B23/0252 C03B23/0357



Family:

Publication number	Publication date	Application number	Application date
CO20170005583 A1	20171020	CO20170005583	20170605
US2018194663 AA	20180712	US20170859413	20171230
WO18122767 A1	20180705	WO20171B58466	20171228

Priority:

US20160440444P 20161230 US20170859413 20171230

Probable Assignee: AGP AMERICA S A

Assignee(s): (std): AGP AMERICA S A

Assignee(s): AGP AMERICA SA

Inventor(s): (std): LE NY JEAN MARIE ; MANNHEIM ASTETE MARIO ARTURO ; POZZEBON JAIRTON ; SUAREZ JUAN PABLO

Inventor(s): MARIO ARTURO MANNHEIM ASTETE ; JUAN PABLO SUAREZ ; JEAN MARIE LE NY ; JAIRTON POZZEBON

Agent(s): CARLOS REINALDO OLARTE GARCIA

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DJ DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JO JP KE KG KH KM KN KP KR KW KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Title: APPARATUS FOR PRODUCING TWO DIMENSIONALLY BENT GLASS

Abstract: An apparatus for producing two-dimensionally bent and optionally tempered glass plates includes a roller oven (1), a pressing and bending station (2) and a cooling station (3). A lower **male mold**-like, full surface **bending mold** (10) with two-dimensionally shaped bending surface is arranged in the pressing and bending station (2). The top surface of the bending surface of the **bending mold** (10) is located in the conveying plane defined by the conveying rollers (5). The wall of the **bending mold** (10) forming the bending surface is provided with bores (14), which can be supplied with hot gas for forming a hot gas cushion. After positioning the glass plate (4) on the hot gas cushion, the **female mold**-like frame **bending mold** (11) is lowered onto the glass plate (4). The bent glass plate slides on the hot gas cushion into the cooling station (3).

Classifications:

International (IPC 8-9): C03B23/03 C03B23/035 C03B27/04

C03B35/24 (Advanced/Invention);

C03B23/02 C03B27/00 C03B35/00 (Core/Invention)

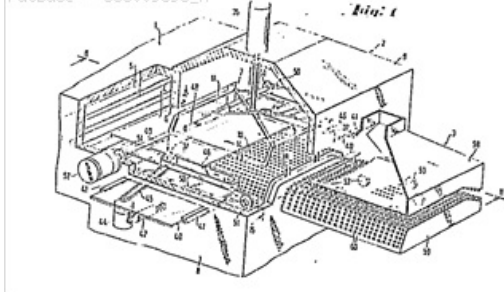
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CPC: C03B23/03 C03B23/035 C03B2225/02

European: C03B23/03 C03B23/035 M03B225/02

US: 65/182.2 65/273 65/289 65/290 65/291

PatBase - US5009695_A



Family:

Publication number	Publication date	Application number	Application date
DE3819503 C1	19890720	DE19883819503	19880608
DE68908614 D1	19930930	DE19896008614	19890605
DE68908614 T2	19940224	DE19896008614T	19890605
EP0346200 A2	19891213	EP19890401537	19890605
EP0346200 A3	19901017	EP19890401537	19890605
EP0346200 B1	19930825	EP19890401537	19890605
FI87761 B	19921113	FI19890002802	19890607
FI87761 C	19930225	FI19890002802	19890607
FI892802 A	19891209	FI19890002802	19890607
FI892802 A0	19890607	FI19890002802	19890607
US5009695 A	19910423	US19890362346	19890606

Priority:

DE19883819503 19880608 DE19896008614 19890605

Probable Assignee: SAINT GOBAIN VITRAGE

Assignee(s): (std): GLASWERKE GMBH VER ; SAINT GOBAIN VITRAGE ; VER GLASWERKE GMBH

Assignee(s): VEGLA VEREINIGTE GLASWERKE GMBH 5100 AACHEN DE ; VEGLA VEREINIGTE GLASWERKE GMBH 52066 AACHEN DE ; SAINT GOBAIN VITRAGE INTERNATIONAL ; SAINT GOBAIN VITRAGE LES MIROIRS ; VEGLA VEREINIGTE GLASWERKE GMBH

Inventor(s): (std): KUSTER HANS WERNER ; VANASCHEN LUC ; KUSTER HANS WERNER DR

Inventor(s): KUSTER HANS WERNER D 5100 AACHEN DE ; VANASCHEN LUC EUPEN BE ; VANASCHEN LUC B 4700 EUPEN BE ; KUSTER HANS WERNER DR 5100 AACHEN DE

Designated states: BE CH DE FR GB IT LI

Title: Apparatus for press bending glass sheets

Abstract: 1,134,738. Bending glass sheets. LIBBEY OWENS FORD GLASS CO. 7 Sept., 1966 [13 Sept., 1965], No. 39960/66. Heading C1M. Apparatus for bending glass sheets 12 include opposed mould parts 25, 26 relatively movable to press a heated sheet 12 between complementary shaping surfaces 27, 28, the shaping surface, 28, on at least one of the mould parts being engageable with the marginal edge portions of the glass sheet and the mould part, 26, having passageways 46 formed therein through which a cooling fluid is circulated. Glass sheets 12 are conveyed on rollers 13 through a heating furnace 10 and thence on a roll continuously moving conveyer 16 between the mould parts 25, 26, the bent sheet finally passing to rolls 18 and between blowing chests 20 to temper the glass. The lower mould part 26 is pressed upwardly by linkage 41, 42 and a bar 37 with a cam follower 35 engaging a disc cam 38, the movement being synchronized and initiated as by a sensing device operated by the movement of a glass sheet. The mould part 26 is formed by a number of separate rail parts 30 spaced to pass between the rolls of the conveyer 16. Each section 30 is formed of square section metal 45 provided with a cover 32 of refractory material to form the shaping surface 28, and each section is connected by conduits 50 to a manifold 51 by which cooling air is passed into and out of ports (48), (49).

Classifications:

International (IPC 8-9): C03B23/03 (Advanced/Invention);
C03B23/02 (Core/Invention)

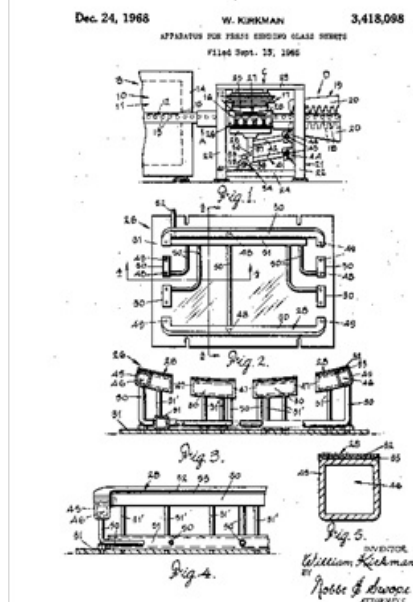
International (IPC 1-7): C03B23/03 C03B23/22

CPC: C03B23/03 C03B2225/02

European: C03B23/03 M03B225/02

US: 65/106 65/120 65/273 65/275 65/288 65/356

PatBase - US3418098_A



Family:

Publication number	Publication date	Application number	Application date
BE686664 A	19670309		19660909
DE1596496 A1	19710318	DE19661596496	19660912
ES331134 A1	19670701	ES19660331134	19660912
FR1503628 A	19671201	FR19660076079	19660912
GB1134738 A	19681127	GB19660039960	19660907
LU51938 A	19680321		19660912
NL6612800 A	19670314	NL19660012800	19660912
US3418098 A	19681224	US19650486907	19650913

Priority:

US19650486907 19650913

Probable Assignee: LIBBEY OWENS FORD GLASS CO

Assignee(s): (std): LIBBEY OWENS FORD GLASS CO

Assignee(s): LIBBEY OWENS FORD GLASS COMPANY

Inventor(s): (std): WILLIAM KIRKMAN ; KIRKMAN WILLIAM

Title: TREATING GLASS SHEETS DURING SHAPING AND COOLING

Abstract: Press bending heated glass sheets between a solid type-press bending mold and a frame-type press bending mold introduces a temperature gradient through the thickness of the glass. This gradient induces thermal warpage when the glass cools below its strain point. The present invention compensates for this warpage by cooling the surface engaged by the frame-type mold more rapidly than the surface engaged by the solid-type pressing mold and supporting the glass sheet with a shaping surface that engages at least a portion of the surface cooled more slowly during the cooling operation.

Classifications:

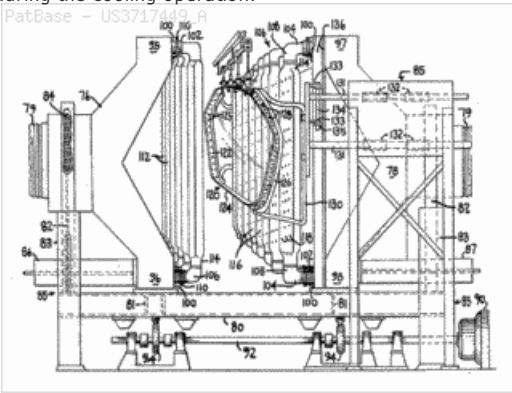
International (IPC 8-9): C03B23/031 C03B27/052 (Advanced/Invention); C03B23/02 C03B27/00 (Core/Invention)

International (IPC 1-7): C03B23/02 C03B23/03 C03B27/04

CPC: C03B23/031 C03B27/052

European: C03B23/031 C03B27/052

US: 65/104 65/106 65/273 65/275 65/287 65/348



Family:

Publication number	Publication date	Application number	Application date
US3717449 A	19730220	US19700077284	19701001
US3816089 A	19740611	US19720299541	19721020

Priority:

US19700077284 19701001 US19720299541 19721020

Probable Assignee:

PPG INDUSTRIES INC

Assignee(s): (std):

PPG IND INC ; PPG INDUSTRIES INC

Assignee(s):

PPG IND INC US

Inventor(s): (std):

SEYMOUR S

Inventor(s):

SEYMOUR S US

Title: APPARATUS FOR BENDING GLASS SHEETS WITH ALIGNING MEANS

Abstract: In a continuously fed glass-bending machine C having a heating zone A a two-speed conveyor 20 and a tempering zone D; the glass sheet is fed between mould surfaces 25, 28 and aligned by two stops 43 that retract to allow the bent sheet to proceed to the tempering zone and the invention relates to having at least one stop adjustable in a direction parallel to the path of the glass sheets so that varying sizes of sheet can be bent without stopping the process. To this end, the adjustment is by a screw revolved by a spur wheel, the latter being driven by a rack. An electronic circuit for delisting the sheet, timing and changing the speed of the conveyors is disclosed.

Classifications:

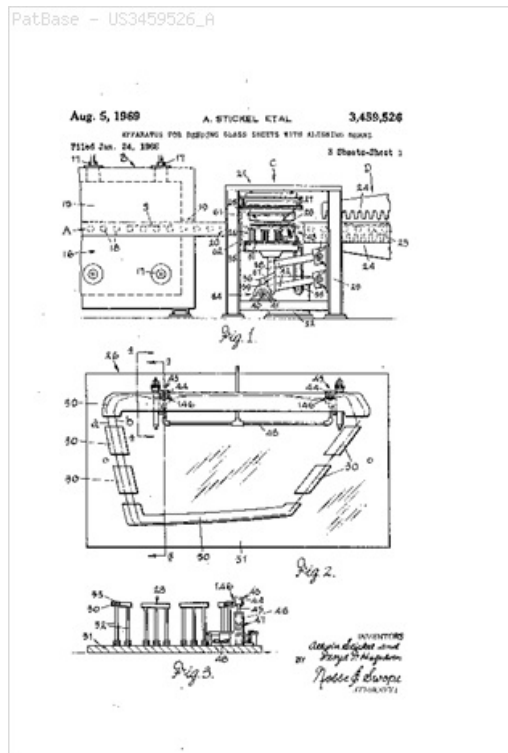
International (IPC 8-9): C03B23/03 (Advanced/Invention);
C03B23/02 (Core/Invention)

International (IPC 1-7): C03B23/00 C03B23/02 C03B23/03

CPC: Y02P40/57 C03B23/03 C03B2225/02

European: C03B23/03 M03B225/02

US: 65/107 65/268 65/289 65/305 65/323



Family:

Publication number	Publication date	Application number	Application date
BE693034 A	19670724		19670123
DE1596505 A1	19710318	DE19671596505	19670124
DE1596505 B2	19760219	DE19671596505	19670124
DE1596505 C3	19761007	DE1967L055575	19670124
ES336016 A1	19671216	ES19670336016	19670124
FR1509422 A	19680112	FR19670092186	19670123
GB1101237 A	19680131	GB19670002409	19670117
JP51006166 B4	19760226	JP19670004984	19670124
LU52858 A	19680828		19670123
NL150404 B	19760816	NL19670001112	19670124
NL6701112 A	19670725	NL19670001112	19670124
US3459526 A	19690805	US19660522702	19660124

Priority:

US19660522702 19660124 DE1967L055575 19670124

Probable Assignee: LOF GLASS INC

Assignee(s): (std): LIBBEY OWENS FORD GLASS CO

Assignee(s): LIBBEY OWENS FORD GLASS CO TOLEDO OHIO VER ST V AM ; LOF GLASS INC ; LIBBEY OWENS FORD GLASS COMPANY ; LIBBEY OWENS FORD GLASS COMPANY TOLEDO OHIO VER ST V AM

Inventor(s): (std): HAGEDORN FLOYD T ; HAGEDORN FLOYD THEODORE ; STICKEL ALLWIN ; THEODORE HAGEDORN FLOYD

Inventor(s): ALLWIN STICKEL ; FLOYD T HAGEDORN

Title: GLASS TRANSPORTATION SYSTEM

Abstract: A pressure pad array is used to float glass sheets from a glass heating furnace to a ring mold in a press bending station. The pressure pads have transversely spaced, longitudinally-extending slotted nozzles angled towards one another to provide a static pressure area for floating the glass sheet. The slotted nozzles are aligned with the direction of glass sheet travel and the space between adjacent pressure pads is covered by a spacer baffle to generate additional static pressure flotation areas. The static pressure areas formed by the slotted nozzles generally produce uniform pressure profiles extending longitudinally and transversely against the sheet's underside to stably float the glass sheets on a heated gas cushion.

Classifications:

International (IPC 8-9): B65G51/03 C03B23/03 C03B23/035 C03B29/12 C03B35/24 (Advanced/Invention);

C03B35/24 (Advanced/Non-invention);

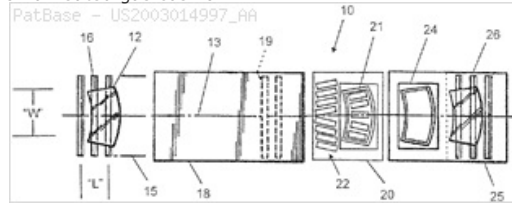
B65G51/00 C03B23/02 C03B29/00 C03B35/00 (Core/Invention)

International (IPC 1-7): B65G51/03 C03B23/03 C03B23/035 C03B29/12 C03B35/00 C03B35/24 C03B40/02

CPC: C03B23/03 C03B23/035 C03B29/12 C03B35/24 C03B2225/02

European: C03B23/03 C03B23/035 C03B29/12 C03B35/24 M03B225/02

US: 198/493 198/721 266/103 266/111 266/274 406/70 406/88 65/110 65/182.1 65/182.2 65/25.1 65/25.2 65/25.4 65/25.1 65/252 65/254 65/29.15

**Family:**

Publication number	Publication date	Application number	Application date
AU2001232920 AA	20010903	AU20010232920	20010122
BRPI0108619 A	20030318	BR2001PI08619	20010122
CA2401010 AA	20020820	CA20012401010	20010122
CN1454186 A	20031105	CN20018008665	20010122
EP1257507 A1	20021120	EP20010904996	20010122
JP2003523916 T2	20030812	JP20010561693T	20010122
KR20020097185 A	20021231	KR20027011110	20010122
MXPA02008177 A1	20040906	MX2002PA08177	20010122
US2003014997 AA	20030123	US20020246182	20020918
US6505483 BA	20030114	US20000514007	20000225
WO0162680 A1	20010830	WO2001US02142	20010122

Priority:

US20000514007 20000225 WO2001US02142 20010122 US20020246182 20020918

Probable Assignee: LIBBEY OWENS FORD CO

Assignee(s): (std): DUNIFON THOMAS A ; LIBBEY OWENS FORD CO ; SURFACE COMB INC ; PILKINGTON NORTH AMERICA INC ; SURFACE COMBUSTION INC

Assignee(s): ROZEVINK LARRY L ; LIBBEY OWENS FORD COMPANY ; HOETZL MAX

Inventor(s): (std): DUNIFON T A ; DUNIFON THOMAS A ; HOETZL M ; HOETZL MAX ; LL ROZEVINK ; M HOETZL ; ROZEVINK L L ; ROZEVINK LARRY L ; TA DUNIFON

Inventor(s): THOMAS A DUNIFON ; T A DUNIFON ; MAX HOETZL ; L L ROZEVINK ; LARRY L ROZEVINK

Agent(s): MACRAE AND CO

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BY BZ CA CF CG CH CI CM CN CR CU CY CZ DE DK DM DZ EE ES FI FR GA GB GD GE GH GM GN GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LI LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NE NL NO NZ PL PT RO RU SD SE SG SI SK SL SN SZ TD TG TJ TM TR TT TZ UA UG UZ VN YU ZA ZW

Title: Process for the forming of glass plates and application of the process to obtain glazings with complex shapes

Abstract: A method for bending a sheet of glass heated to a bending temperature in a horizontal furnace through which it is conveyed by a plane conveyor delivering the glass sheet to a bending cell heated to substantially the same temperature as the bending temperature. A concave annular recessed portion provides gravity preshaping and then moves the glass sheet vertically towards a solid convex projecting portion within the cell, so that the sheet is squeezed between the concave and convex portions. A device for carrying out the method and its use for producing glazing with a particularly complex shape are disclosed.

Classifications:

International (IPC 8-9): C03B23/025 C03B23/03 C03B23/035 C03B23/25 C03B23/35 C03B31/00 (Advanced/Invention);

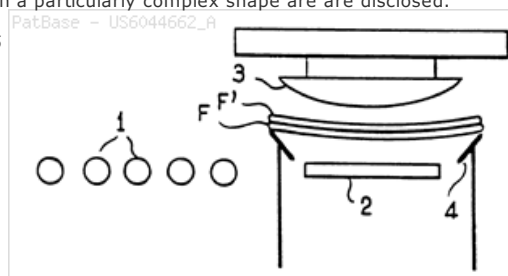
C03B23/03 (Advanced/Non-invention)

International (IPC 1-7): C03B23/023 C03B23/025 C03B23/03 C03B23/035 C03B23/24 C03B31/00

CPC: C03B23/0252 C03B23/0305 C03B23/0357

European: C03B23/025B C03B23/03 C03B23/035B C03B23/035B3 C03B23/03C

US: 65/106 65/107 65/182.2 65/290



Family:

Publication number	Publication date	Application number	Application date
BRPI9405505 A	19990908	BR1994PI05505	19940707
CA2143650 AA	19950228	CA19942143650	19940707
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CN11111906 A	19951115	CN19941090468	19940707
CN1239419 C	20060201	CN19941090468	19940707
CN1651345 A	20050810	CN200410088068	19940707
CO4230130 A1	19951019	CO19940029133	19940705
CZ288093 B6	20010411	CZ19950000593	19940707
CZ9500593 A3	19960117	CZ19950000593	19940707
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JP8501272 T2	19960213	JP19950503870T	19940707
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KR19950703492 A	19950920	KR19950700980	19940707
PL176752 B1	19990730	PL19940307861	19940707
PL307861 A1	19950626	PL19940307861	19940707
PT660809 T	20000428	PT19940922885T	19940707
RU2121983 C1	19981120	RU19950108246	19940707
RU95108246 A	19980220	RU19950108246	19950307
SK281438 B6	20010312	SK19950000306	19940707
SK30695 A3	19950711	SK19950000306	19940707
TR28871 A	19970806	TR19940000621	19940706
US6044662 A	20000404	US19970852377	19970507
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WO9501938 A1	19950119	WO1994FR00847	19940707

Priority:

FR19930008455 19930709 WO1994FR00847 19940707 US19970852377 19970507
US19980137424 19980820

Probable Assignee: SAINT GOBAIN VITRAGE

Assignee(s): (std): MORIN CLAUDE ; SAINT GOBAIN GLASS FRANCE ; SAINT GOBAIN VITRAGE ; SAINT GOBAIN VITRAGE INT ; SEHN GOBEHN VITRAZH

Assignee(s): SAINT GOBAIN VITRAGE LES MIROIRS COURBEVOIE ; SAINT GOBAIN VITRAGE S A ; SAINT GOBAIN VITRAGE SA ; SAINT GOBAIN VITRAGE INTERNAL

Inventor(s): (std): KLOD MOREN ; MORIN CLAUDE ; CLAUDE MORIN

Agent(s): GOUDREAU GAGE DUBUC ; RAMIRO CASTRO DUQUE; SAINT GOBAIN RECHERCHE

Designated states: AT BE BR CA CH CN CY CZ DE DK ES FI FR GB GR IE IT JP KP KR LI LU MC NL PL PT RU SE SK UA US

Title: GLASS SHEET PRESS **BENDING MOLD**

Abstract: An improved covering for continuous surface press **bending molds** providing selectively variable rigidity for matching that desired in bending a particular part on the mold. The shaping element of the mold includes a resilient body having a latticework of flexible metallic bands encapsulated therein. The resilient body is covered by a plurality of superimposed individual sheets of a fibrous, heat-resistant, normally pliable material which, in turn, are covered by a layer of fiberglass cloth. One or more of the individual fibrous sheets is treated with a rigidizer to impart a selected suitable degree of rigidity to the shaping element.

Classifications:

International (IPC 8-9): C03B11/06 C03B23/02 C03B23/023

C03B23/03 (Advanced/Invention);

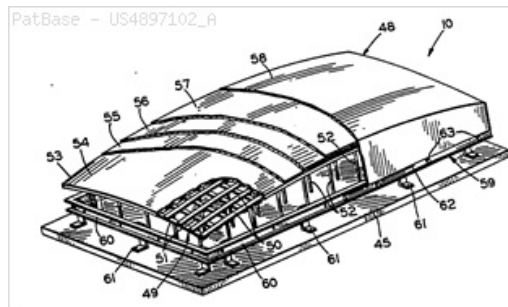
C03B23/02 (Core/Invention)

International (IPC 1-7): B32B17/12 C03B11/06 C03B23/023 C03B23/03

CPC: C03B40/005 C03B23/03 C03B2225/02

European: C03B23/03 C03B40/00F M03B225/02

US: 65/104 65/273 65/287 65/374.11



Family:

Publication number	Publication date	Application number	Application date
AT102176 E	19940315	AT19900904545T	19900305
AU199051795 A1	19901009	AU19900051795	19900305
AU622993 B2	19920430	AU19900051795	19900305
BRPI9005809 A	19910806	BR1990PI05809	19900305
CA2007702 AA	19900914	CA19902007702	19900112
CA2007702 C	20000502	CA19902007702	19900112
CN1026227 C	19941019	CN19901000581	19900203
CN1045569 A	19900926	CN19901000581	19900203
CZ284915 B6	19990414	CS19900001241	19900314
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DD300417 A5	19920611	DD19900338694	19900314
DD338694 AB	19920507	DD19900338694	19900314
DD338694 B1	19920507	DD19900338694	19900314
DE69006981 D1	19940407	DE19906006981	19900305
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EP0414877 A1	19910306	EP19900904545	19900305
EP0414877 A4	19910925	EP19900904545	19900305
EP0414877 B1	19940302	EP19900904545	19900305
ES2049973 T3	19940501	ES19900904545T	19900305
FI89792 B	19930813	FI19900005576	19901112
FI89792 C	19931125	FI19900005576	19901112
FI905576 A0	19901112	FI19900005576	19901112
HU213957 B	19971128	HU19900002308	19900305
HU64922 A2	19940328	HU19900002308	19900305
HU9002308 A0	19920428	HU19900002308	19900305
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JP3504595 T2	19911009	JP19900504482T	19900305
KR0138103 B1	19980425	KR19900072440	19901114
KR19927000165 A	19920219	KR19907002440	19900305
MX166532 B	19930114	MX19900019154	19900116
PL165029 B1	19941130	PL19900284298	19900314
RU2069647 C1	19961127	SU19904831901	19900305
TR25898 A	19931101	TR19900000268	19900314
US4897102 A	19900130	US19890323356	19890314
WO9010605 A1	19900920	WO1990US01195	19900305
YU46090 A	19920528	YU19900000460	19900307
YU47080 B	19941228	YU19900000460	19900307
ZA9000475 A	19901031	ZA19900000475	19900123

Priority:

US19890323356 19890314

CA19902007702 19900112

EP19900904545 19900305

WO1990US01195 19900305

DD19900338694 19900314

Probable Assignee: LIBBEY OWENS FORD CO

Assignee(s): (std): LIBBEY OWENS FORD CO

Assignee(s): LIBBEY OWENS FORD CO A CORP OF DE ; LIBBEY OWENS FORD CO TOLEDO OHIO US ; TORAINOBA CORP ; LIBBEY OWENS FORD COMPANY ; LIBBEY OWENS FORD CO US ; MODESITT WILLIAM L ; HAGEDORN FLOYD T ; HALL HAROLD R ; LIBBEY OWENS FORD CO

Inventor(s): (std): FLOYD T HAGEDORN ; HAGEDORN F T ; HAGEDORN FLOYD ; HAROLD R HALL ; HODESITT WILLIAM L ; HALL H R ; HALL HAROLD ; MODESITT W L ; MODESITT WILLIAM ; WILLIAM L MODESITT ; MODESITT WILLIAM L ; HALL HAROLD R ; HAGEDORN FLOYD T

Inventor(s): GAROLD R KHOLL ; FLOJD T KHEJDZHDORN ; VILLYAM LMOUDSITT ; GAROLD RKHOLL ; FLOJD
TKHEJDZHDORN ; VILLYAM L MOUDSITT ; MODESITT WL ; HALL HR ; HOORU HARORUDO AARU ;
MODESHITSUTO UIRIAMU ERU ; HAGEDORN FT ; HAGEDOON FUROIDO TEII

Agent(s): SHELSTON IP; SHELSTON IP PTY LTD; MACRAE AND CO

Designated states: AT AU BE BR CH DE DK ES FI FR GB HU IT JP KR LI LU NL SE SU

Title: GLASS SHEET PRESS **BENDING MOLD**

Abstract: A **bending mold** particularly adapted for use in a press bending apparatus. The mold disclosed herein is formed of a substantially solid block of a castable ceramic material such as vitreous silica in an hydraulic binder which has a coefficient of thermal expansion no greater than 0.45×10^{-6} at 1,800 DEG F. and a compressive strength of at least 3,000 lbs. per sq. in. at 2,000 DEG F.

Classifications:

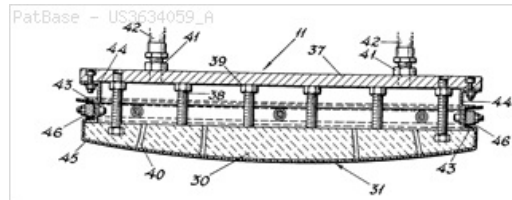
International (IPC 8-9): C03B23/03 (Advanced/Invention)

International (IPC 1-7): B60T7/12 C03B23/00 C03B23/02 C03B23/03 C04B13/02 C04B7/32

CPC: C03B23/03 C03B40/005 C03B2225/02

European: C03B23/03 C03B40/00F

US: 65/273 65/275 65/287 65/374 65/374.11 65/374.15



Family:

Publication number	Publication date	Application number	Application date
BE760772 A	19710527	BE19700760772	19701223
DE2063122 A1	19720907	DE19702063122	19701216
FR2121410 A1	19720825	FR19710000692	19710111
FR2121410 B1	19770617	FR19710000692	19710111
GB1301370 A	19721229	GB19700059180	19701212
LU62335 A	19710527		19701228
NL7018502 A	19720620	NL19700018502	19701218
US3634059 A	19720111	US19690851645	19690820

Priority:

US19690851645 19690820 GB19700059180 19701212 DE19702063122 19701216
NL19700018502 19701218 LU19700062335 19701228 FR19710000692 19710111

Probable Assignee: LOF GLASS INC

Assignee(s): (std): LIBBEY OWENS FORD CO ; LIBBEY OWENS FORD GLASS CO

Assignee(s): LOF GLASS INC ; LIBBEY OWENS FORD CY ; LIBBEY OWENS FORD CY 811 MADISON AVENUE TOLEDO OHIO E U A ; LIBBEY OWENS FORD CY 811 MADISON AVENUE TOLEDO OHIO EUA ; LIBBEY OWENS FORD GLASS

Inventor(s): (std): MILLER MR R C ; MILLER RICHARD C ; MR R C MILLER

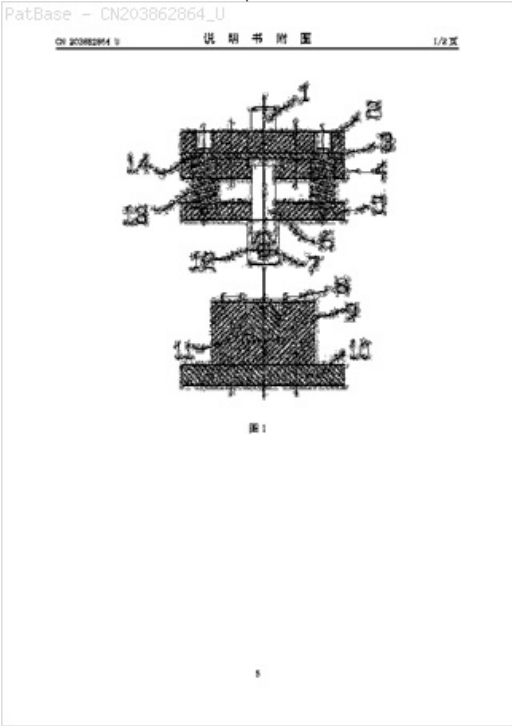
Inventor(s): MR RC MILLER ; RICHARD C MILLER

Title: ROUND RING **BENDING MOLD**

Abstract: The utility model discloses a round ring **bending mold**. The round ring **bending mold** comprises an upper mold seat, a **male mold**, a lower mold seat and a **female mold**, the **male mold** is fixedly connected below the upper mold seat, the **female mold** is connected above the lower mold seat, a first groove is formed in the lower end face of the **male mold**, the bottom of the first groove is shaped in a semi-circle, two sides of the first groove extend outwards to be flared, a mold core support is movably connected below the upper mold seat, a mold core is connected onto the mold core support and is disposed right below the **male mold**, the **female mold** comprises a **female mold** seat and a **female mold** insert block, the **female mold** insert block is connected onto the female seat, a second semi-circular groove is formed in the upper side face of the **female mold** insert block, recesses are formed between the left side of the **female mold** insert block and the **female mold** seat as well as between the right side of the **female mold** insert block and the **female mold** seat, and positioning structures are arranged on the left side and the right side of the upper surface of the **female mold** seat. The round ring **bending mold** has the advantages that a round ring can be formed by being bent, production cost is reduced, two processes are finished on one mold, labor hour is shortened, and the round ring **bending mold** is simple in structure and convenient to operate.

Classifications:

International (IPC 8-9): B21D37/10 (Advanced/Invention)



Family:

Publication number	Publication date	Application number	Application date
 CN203862864 U	20141008	CN201420314077U	20140613

Priority:

CN201420314077U 20140613

Probable Assignee: HAO HAI

Assignee(s): (std): HAO HAI

Inventor(s): INVENTOR HAS WAIVED RIGHT TO BE MENTIONED

Title: Method of press bending a painted glass sheet

Abstract: Engage a glass sheet having a painted border portion on one surface between press **bending molds** of different outline size in such a manner as to avoid having either mold contact the painted border portion and stick to the paint to distort the shaped glass on retracting the molds.

Classifications:

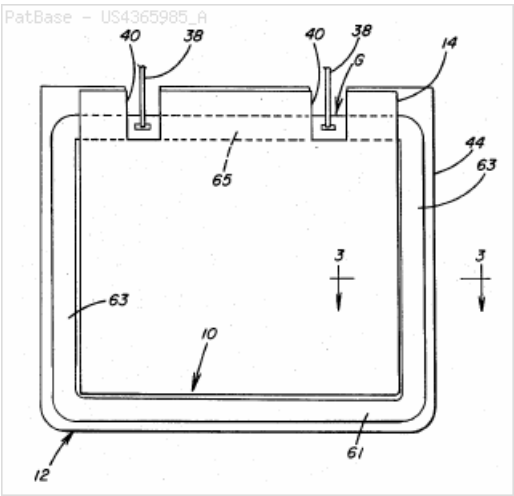
International (IPC 8-9): C03B23/031 (Advanced/Invention);
C03B23/02 (Core/Invention)

International (IPC 1-7): C03B23/03

CPC: C03B23/031

European: C03B23/031

US: 65/103 65/106 65/273



Family:

Publication number	Publication date	Application number	Application date
US4365985 A	19821228	US19810250961	19810401

Priority:

US19810250961 19810401

Probable Assignee:	PPG INDUSTRIES INC
Assignee(s): (std):	PPG IND INC ; PPG INDUSTRIES INC
Assignee(s):	PPG IND
Inventor(s): (std):	SLABACH JR JOHN C

Title: SPRINGBACK PREVENTION **BENDING MOLD** FOR MACHINING AUTOMOBILE SPARE PARTS

Abstract: The invention discloses a springback prevention **bending mold** for machining automobile spare parts. The springback prevention **bending mold** comprises a **male mold** machining part and a **female mold** machining part which is placed at the upper end of the **male mold** machining part and matched with the **male mold** machining part. The springback prevention **bending mold** for machining automobile spare parts is characterized in that the **male mold** machining part comprises a lower fixing plate and a **male mold** fixed at the upper end of the lower fixing plate, buffer bearing parts are arranged on the two sides of the **male mold**, the buffer bearing parts comprise telescopic supporting pillars and bearing tables fixed at the upper ends of the supporting pillars, the bearing tables are provided with positioning grooves, and the initial position of each bearing table and a platform at the top end of the **male mold** are placed in the same horizontal line; the **female mold** machining part comprises an upper fixing plate and a **female mold** fixed at the lower end of the upper fixing plate, and a positioning table of the **female mold** is provided with positioning protrusions used for being matched with the positioning grooves; the **female mold** machining part is communicated with a press machine through a pressure transmission shaft. The springback prevention **bending mold** has the advantages of being simple in structure, high in practicability, good in springback prevention effect and the like.

Classifications:

International (IPC 8-9): B21D37/10 (Advanced/Invention)

PatBase - CN103639301_A

CN 103639301 A 说明书附图 1/1 页



Family:

Publication number	Publication date	Application number	Application date
 CN103639301 A	20140319	CN201310635388	20131129

Priority:

CN201310635388 20131129

Probable Assignee: DALIAN XINYONG IND MFG CO LTD

Assignee(s): (std): DALIAN XINYONG IND MFG CO LTD

Assignee(s): DALIAN XIN YONG INDUSTRIAL MFG CO LTD ; DALIAN XINYONG IND MFG CO

Inventor(s): (std): WANG DONGWEI

Title: Apparatus for bending glass sheets

Abstract: A press **bending mold** having a flexible, continuous shaping surface that is readily adjustable to produce a wide variety of simple as well as more complex, compound shapes. The mold includes a plurality of adjustment controls that are operably connected at select points on the backside of the shaping surface. The controls are conveniently located outwardly of the press area to enable alterations to be made to the contour of the shaping surface, quickly and easily, without interference or interruption of the glass bending and tempering operation.

Classifications:

International (IPC 8-9): C03B23/023 C03B23/03

C03B27/04 (Advanced/Invention);

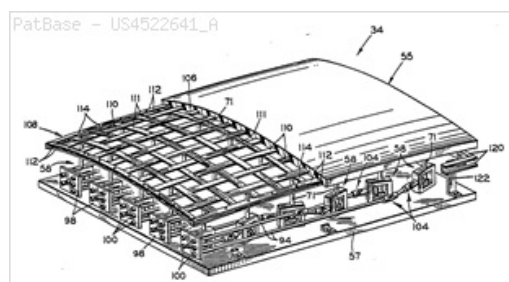
C03B23/02 C03B27/00 (Core/Invention)

International (IPC 1-7): C03B23/023 C03B23/03 C03B27/04

CPC: C03B23/03 C03B23/0302 C03B2225/02

European: C03B23/03 C03B23/03B M03B225/02

US: 65/273 65/287 65/290 65/291



Family:

Publication number	Publication date	Application number	Application date
AU198540688 A1	19851128	AU19850040688	19850225
AU576233 B2	19880818	AU19850040688	19850225
BRPI8506688 A	19860415	BR1985PI06688	19850225
CA1211288 A1	19860916	CA19850476511	19850314
DE3571966 D1	19890907	DE19853571966	19850225
EP0179794 A1	19860507	EP19850901671	19850225
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ES8604837 A1	19860316	ES19850542014	19850408
IT1181881 A	19870930	IT19850047997	19850424
IT8547997 A0	19850424	IT19850047997	19850424
JP61501979 T2	19860911	JP19850501134T	19850225
KR19867000027 A	19860131	KR19857000406	19850225
KR930001965 B1	19930320	KR19850070406	19850225
KR930001965 B1	19930320	KR19850700406	19850225
MX163224 B	19920312	MX19850205089	19850425
US4522641 A	19850611	US19840604461	19840427
WO8505100 A1	19851121	WO1985US00301	19850225

Priority:

US19840604461 19840427 WO1985US00301 19850225 CA19850476511 19850314

Probable Assignee: LOF GLASS INC

Assignee(s): (std): LIBBEY OWENS FORD CO ; LOF GLASS INC ; LOG GLASS INC

Assignee(s): LIBBEY OWENS FORD CO TOLEDO OH AN OH CORP ; LIBBEY OWENS FORD COMPANY ; HAGEDORN FLOYD T ; KOONTZ MERWYN L

Inventor(s): (std): LLOYD KOONTZ MERWYN ; KOONTZ MERWYN LLOYD ; KOONTZ MERWYN L ; KOONTZ MERWYN ; HAGEDORN FLOYD THEODORE ; HAGEDORN FLOYD T ; HAGEDORN FLOYD ; THEODORE HAGEDORN FLOYD

Inventor(s): MERWYN LLOYD KOONTZ ; MERWYN L KOONTZ ; FLOYD THEODORE HAGEDORN ; FLOYD T HAGEDORN

Agent(s): PHILLIPS ORMONDE FITZPATRICK; MACRAE AND CO

Designated states: AT AU BE BR CH DE FR GB JP KR LU NL SE

Title: Process and apparatus for manufacturing a curved sheet of glass

Abstract: A process for bending a glass sheet, in particular one for motor vehicles, with curved areas having small radii of curvature. The bending device used is a bending press having a male type mold and a female type mold. The female type mold consists of at least two mold parts hinged together. After part of the glass sheet heated to bending temperature has been received by the bending press, at least one swivelling mold part of the female type mold is swivelled around the swivel axis, against the male type mold. An adjustable electric motor serves as the drive motor to move the swivelling mold parts. The angular velocity of the swivel action of the swivelling mold parts during the bending process is adjusted as a function of the temperature of the glass sheet and the desired degree of deformation.

Classifications:

International (IPC 8-9): C03B23/027 C03B23/03 C03B23/035
C03B35/20 (Advanced/Invention);
C03B23/02 C03B35/00 (Core/Invention)

International (IPC 1-7): C03B23/023 C03B23/027 C03B23/03 C03B23/23

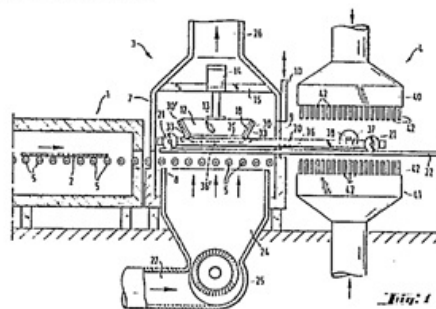
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European: C03B23/027 C03B23/03 C03B23/035 C03B23/03C

C03B23/03D C03B35/20B

US: 65/106 65/163 65/273 65/290 65/291

PatBase - US4915722_A



Family:

Publication number	Publication date	Application number	Application date
BRPI8900507 A	19891003	BR1989PI00507	19890203
CA1337240 A1	19951010	CA19890590049	19890203
DE3803575 A1	19890810	DE19883803575	19880206
DE3803575 C2	19910725	DE19883803575	19880206
DE68915804 D1	19940714	DE19896015804	19890206
DE68915804 T2	19941222	DE19896015804T	19890206
EP0328442 A2	19890816	EP19890400324	19890206
EP0328442 A3	19901003	EP19890400324	19890206
EP0328442 B1	19940608	EP19890400324	19890206
ES2056237 T3	19941001	ES19890400324T	19890206
FI87450 B	19920930	FI19890000557	19890206
FI87450 C	19930111	FI19890000557	19890206
FI890557 A	19890807	FI19890000557	19890206
FI890557 A0	19890206	FI19890000557	19890206
JP1242429 A2	19890927	JP19890025584	19890203
JP2628739 B2	19970709	JP19890025584	19890203
KR19890012894 A	19890920	KR19890001254	19890203
KR970003497 B1	19970318	KR19890001254	19890203
US4915722 A	19900410	US19890305705	19890203
YU24889 A	19900831	YU19890000248	19890202
YU47065 B	19941228	YU19890000248	19890202

Priority:

DE19883803575 19880206 CA19890590049 19890203 DE19896015804 19890206

Probable Assignee: VEGLA VEREINIGTE GLASWERKE GMBH

Assignee(s): (std): GLASWERKE GMBH VER ; SAINT GOBAIN VITRAGE ; SAINT GOBAIN ; VER GLASWERKE GMBH

Assignee(s): VEGLA VEREINIGTE GLASWERKE GMBH 52066 AACHEN DE ; VANASCHEN LUC ; D IRIBARNE BENOIT ; SAINT GOBAIN VITRAGE LES MIROIRS ; VEGLA VEREINIGTE GLASWERKE GMBH ; SAINT GOBAIN VITRAGE INTERNATIONAL ; VEGLA VEREINIGTE GLASWERKE GMBH 5100 AACHEN DE ; VEGLA VEREINIGTE GLASWERKE GMBH 52066 AACHEN ; KUSTER HANS WERNER ; RADERMACHER HERBERT ; HAVENITH HUBERT ; NOWOCZYN HANS WERNER

Inventor(s): (std): D IRIBARNE B ; HAVENITH HUBERT ; HANSUUBERUNAA KUSUTAA ; FUUBERUTO HAFUENIITO ; HANSUUBERUNAA NOBOTSUIN ; HAVENITH H ; KUSTER HANS WERNER ; KUSTER HANS WERNER DR ; HERUBAAOT RAADAAMATSUHIYAA ; RADERMACHER HERBERT ; NOWOCZYN HANS WERNER ; VANASCHEN LUC ; NOWOCZYN HANS WERNER DR ; VANASCHERN LUC ; RUTSUKU BANASHIEN ; BENOITO DEIRIBARUNE ; D IRIBARNE BENOIT ; IRIBARNE BENOIT D ; KUSTER W ; NOWOCZYN H W ; KUSTER H W ; RADERMACHER H ; VANASCHEN L

Inventor(s): NOWOCZYN HW ; BENOIT D IRIBARNE ; KUSTER HW ; D IRIBARNE BENOIT D 5100 AACHEN ; D IRIBARNE BENOIT D 5100 AACHEN DE ; VANASCHEN LUC EUPEN BE ; RADERMACHER HERBERT RAEREN BE ; NOWOCZYN HANS WERNER DR 5100 AACHEN DE ; VANASCHEN LUC B 4700 EUPEN ; NOWOCZYN HANS WERNER D 5100 AACHEN ; RADERMACHER HERBERT B 4730 RAEREN ; RADERMACHER HERBERT B 4730 RAEREN BE ; VANASCHEN LUC B 4700 EUPEN BE ; NOWOCZYN HANS WERNER D 5100 AACHEN DE ; KUSTER HANS WERNER DR 5100 AACHEN DE ; HAVENITH HUBERT D 5102 WUERSELEN ; KUSTER HANS WERNER D 5100 AACHEN ; KUSTER HANS WERNER D 5100 AACHEN DE ; HAVENITH HUBERT D 5102 WUERSELEN DE ; HERBERT RADERMACHER ; LUC VANASCHEN ; HUBERT HAVENITH ; HAVENITH HUBERT 5102 WUERSELEN DE ; HANS WERNER NOWOCZYN ; HANS WERNER KUSTER

Agent(s): GOUDREAU GAGE DUBUC

Designated states: BE CH DE ES FR GB IT LI LU NL SE

Title: APPARATUS FOR PRESS BENDING GLASS SHEETS

Abstract: 1,264,754. Bending glass sheets. LIBBEYOWENS-FORD CO. 19 Feb., 1970 [7 March, 1969], No. 7918/70. Heading C1M. Apparatus for bending a heat softened glass sheet 23 by pressing between opposed complemental shaping surfaces 16, 24 formed on opposed mould parts 11, 12 at least one of which, 12, is movable towards and away from the other and at least one of which, 12, includes a base member 20 and a shaping rail 22 mounted thereon, is characterized by the shaping rail 22 being formed of a plurality of individual segments, such as end bars 25 and transverse bars 26, spaced apart end to end to form an open ring adapted to contact marginal portions only of a sheet to be bent and means are provided for resiliently mounting the segments on the base 20 for independent movement relative to one another. Each segment is mounted on the base 20 by at least two yieldable supporting members 21 as shown in Fig. 3. The bars 26 are spaced apart for travel upwardly between the rolls 13 of a conveyor by which the sheet 23 is positioned between the mould parts 11, 12, the sheet 23 being stopped by a locator 45 and interrupting a photo-cell to initiate upward movement of base 20 by pressure cylinder 30. The shaping rail 22 may be covered by glass or ceramic fibre cloth and the mounting members 21 may be cooled as by cold air through vents 43 in the lower housing 31.

Classifications:

International (IPC 8-9): C03B23/02 C03B23/03 (Advanced/Invention); C03B23/02 (Core/Invention)

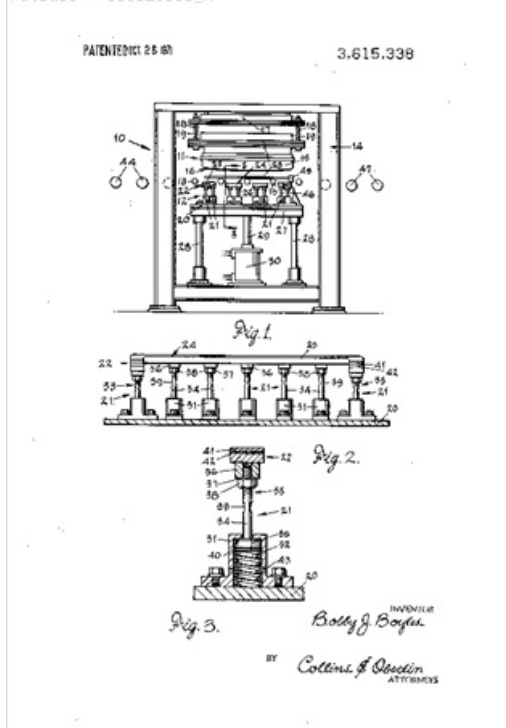
International (IPC 1-7): C03B11/04 C03B23/00 C03B23/02 C03B23/03 C07B C12D13/00

CPC: C03B23/03 C03B2225/02

European: C03B23/03 M03B225/02

US: 65/273 65/290 65/291

PatBase - US3615338_A

**Family:**

Publication number	Publication date	Application number	Application date
AU197011548 A1	19710819	AU19700011548	19700218
AU207011548 A1	19710819	AU19700011548	19700218
BE746501 A	19700731		00000000
BE746501 A1	19700731	BE19700746501	19700225
BR7017205 A0	19730125	BR19700217205	19700304
CA931755 A1	19730814	CA19700075076	19700217
DE2011557 A1	19700924	DE19702011557	19700306
DE2011557 B2	19800110	DE19702011557	19700306
DE2011557 C3	19800911	DE19702011557	19700306
ES376968 A1	19720501	ES19700376968	19700227
FR2034738 A1	19701211	FR19700008132	19700306
FR2034738 B1	19740712	FR19700008132	19700306
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IE34015 B	19750108	IE19700000200	19700217
IE34015 L	19700907	IE19700000200	19700217
LU60419 A	19700428		19700226
NL7002643 A	19700909	NL19700002643	19700225
US3615338 A	19711026	US19690805244	19690307

Priority:

US19690805244 19690307

Probable Assignee: LOF GLASS INC

Assignee(s): (std): LIBBEY OWENS FORD CO ; R G VENENDAAL ; LIBBEY OWENS FORD GLASS CO

Assignee(s): LOF GLASS INC ; LIBBEY OWENS FORD GLASS ; LIBBEY OWENS FORD CY US ; LIBBEY OWENS FORD CO TOLEDO OHIO V ST A ; LIBBEY OWENS FORD COMPANY ; LIBBEY OWENS FORD CY ; LIBBEY OWENS FORD CY 811 MADISON AVENUE TOLEDO OHIO E U A ; BOBBY J BOYLES

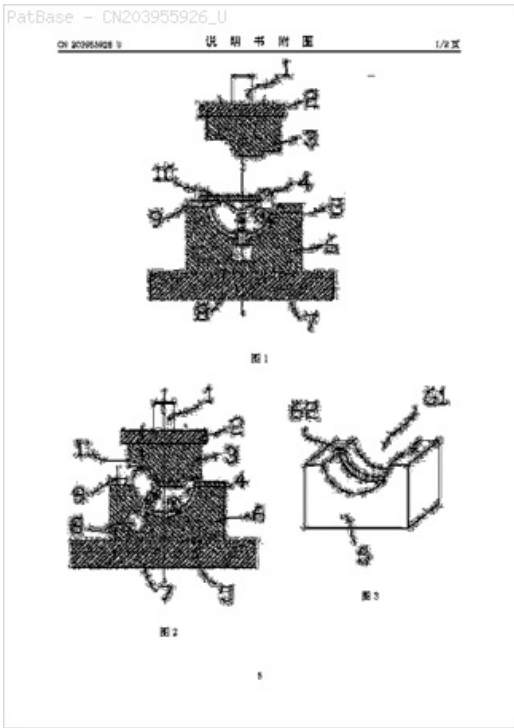
Inventor(s): (std): BOYLES B ; BOYLES B J ; BOYLES BOBBY J ; BOYLES BOBBY JOE

Inventor(s): BOYLES BOBBY JOE PERRYSBURG OHIO V ST A ; B J BOYLES ; BJ BOYLES ; BOBBY J BOYLES ; BOBBY JOE

Title: **BENDING MOLD** OF Z-SHAPED PIECE MADE OF THICK PLATE MATERIAL

Abstract: The utility model discloses a **bending mold** of a Z-shaped piece made of a thick plate material. The mold comprises an upper mold seat, a **male mold**, a lower mold seat and a **female mold**, wherein the **male mold** is fixedly connected to the lower side surface of the upper mold seat; the lower end surface of the upper mold seat comprises a Z-shaped surface; the upper side surface of the lower mold seat is fixedly connected with a **female mold** seat; the **female mold** is rotationally connected to the **female mold** seat; the upper end surface of the **female mold** also comprises a Z-shaped surface; a counter weight is arranged on the **female mold**; a positioning structure is arranged on the upper side of the **female mold** seat. In the forming process of the Z-shaped piece, due to the fact that the **female mold** rotates, downward acting forces are exerted on the three side surfaces of the Z-shaped piece respectively, residual stresses are eliminated, a product unlikely springs back, and the quality of the product is improved.

Classifications:
International (IPC 8-9): B21D37/10 (Advanced/Invention)



Family:

Publication number	Publication date	Application number	Application date
 CN203955926 U	20141126	CN201420432143U	20140802

Priority:

CN201420432143U 20140802

Probable Assignee:

Assignee(s): (std):

Assignee(s):

Inventor(s): (std):

XU YIHONG

XU YIHONG

XU YI HONG

XU YIHONG

Title: Improvements in or relating to checking fixtures for glass **bending molds**

Abstract: 805,907. Glass bending moulds. PITTSBURGH PLATE GLASS CO. Oct. 9, 1956 [Oct. 27, 1955], No. 30727/56. Drawings to Specification. Class 56. A checking fixture for proving the shape of the contact face of a glass-sheet bending mould comprises a member, e.g. of plaster of Paris or aluminium, of generally annular shape with one flat face and the other face shaped roughly to the desired curvature. A master ring is then applied to the rough face, the ring being shaped exactly to the required form, and marking lines are scored on the rough shape which is then smoothed to the required shape. The master ring comprises an annular strip-like band of rigid metal stock braced by transverse and longitudinal bracing members.

Classifications:

International (IPC 8-9): C03B23/025 (Advanced/Invention);
C03B23/02 (Core/Invention)

International (IPC 1-7): C03B23/025

CPC: C03B23/025

European: C03B23/025



Family:

Publication number	Publication date	Application number	Application date
GB805907 A	19581217	GB19560030727	19561009

Priority:

19551027

Probable Assignee:

PITTSBURGH PLATE GLASS CO

Assignee(s): (std):

PITTSBURGH PLATE GLASS CO

Assignee(s):

PITTSBURGH PLATE GLASS COMPANY

Title: PRESS BENDING STATION FOR THE BENDING OF GLASS SHEETS

Abstract: A press bending station includes an annular mold (5) and a full-face mold (6). Holes (10), selectively connected to a negative pressure source, are placed in portions of the full-face mold (6) that are determined by the configuration of the annular mold when the annular mold comes into contact with a heated glass sheet (2) during the press bending process. The sheet (2) is drawn by negative pressure through the holes (10) towards the full-face mold (6) and thus acquires its shape. Positive pressure may be selectively applied to the holes (10) to release the sheet (2). According to the invention, at least some of the holes (10) are arranged in at least one groove (11) formed in the mold face of the full-face mold. The grooves (11) according to the invention accelerate considerably the removal by negative pressure of the air between the molding face of the full-face mold (6) and the glass sheet (2) to be bent and thus improve the press bending process.

Classifications:

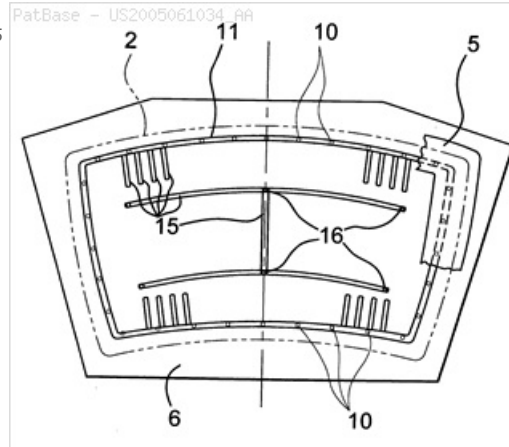
International (IPC 8-9): C03B23/02 C03B23/023 C03B23/03 C03B23/035 C03B40/00 (Advanced/Invention); C03B23/02 C03B23/03 C03B23/035 (Advanced/Non-invention); C03B23/02 (Core/Invention); C03B (Subclass/Invention)

International (IPC 1-7): C03B23/03 C03B23/035 C03B40/04

CPC: C03B23/0357 C03B40/005 C03B23/03

European: C03B23/03 C03B23/035B C03B23/035B3 C03B40/00F

US: 65/106 65/169 65/169P 65/182.2 65/182.200S 65/273 65/273S 65/287 65/356 65/356S



Family:

Publication number	Publication date	Application number	Application date
BRPI0413674 A	20061024	BR2004PI13674	20040913
BRPI0413674 B1	20150818	BR2004PI13674	20040913
CA2535049 AA	20060209	CA20042535049	20040913
CA2535049 C	20120710	CA20042535049	20040913
CN1856451 A	20061101	CN200480027813	20040913
CN1856451 B	20110309	CN200480027813	20040913
EP1663882 A1	20060607	EP20040783835	20040913
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ES2622083 T3	20170705	ES20040783835T	20040913
HU032034 T2	20170828	HU20040783835T	20040913
IN00360KN2006 A	20070316	IN2006KN00360	20060217
IN228369 B	20090206	IN2006KN00360	20060217
JP2007506637 T2	20070322	JP20060528045T	20040913
JP4571137 B2	20101027	JP20060528045T	20040913
KR101106906 B1	20120125	KR20067005706	20040913
KR20060094517 A	20060829	KR20067005706	20040913
MXPA06003000 A1	20060623	MX2006PA03000	20040913
PL1663882 T3	20170831	PL20040783835T	20040913
TR201704068 T4	20170421	TR20170004068T	20040913
US2005061034 AA	20050324	US20030669745	20030924
US7866187 BB	20110111	US20030669745	20030924
WO05033026 A1	20050414	WO2004US29771	20040913
ZA200601465 A	20070627	ZA20060001465	20040913

Priority:

US20030669745 20030924 EP20040783835 20040913 WO2004US29771 20040913

Probable Assignee: PILKINGTON AUTOMOTIVE DEUTSCHLAND GMBH

Assignee(s): (std): BOISSELLE ROBERT J ; FUNK DIETER ; GORGES ANDREAS ; PILZ JOACHIM ; PILKINGTON NORTH AMERICA INC ; PILKINGTON AUTOMOTIVE DEUTSCHLAND GMBH ; PILKINGTON AUTOMOTIVE D GMBH

Assignee(s): PILKINGTON NORTH AMERICA INC PILKINGTON AUTOMOTIVE DEUTSCHLAND GMBH

Inventor(s): (std): ANDREAS BOISSELLE ROBERT J FUN ; BOISSELLE ROBERT ; BOISSELLE ROBERT J ; FUNK DIETER ; GORGES ANDREAS ; GORGES ANDEAS ; GORGES ANDREAS ; JOACHIM PILZ ; DIETER FUNK ; ANDREAS GORGES ; ANDREAS GEORGES ; PILZ JOACHIM

Inventor(s): ROBERT J BOISSELLE ; ANDEAS GORGES ; ORGES ANDREAS ; PILZ JOACHI ; BOISSELLE ROBERT J FUNK DIETER PILZ JOACHIM GEORGE

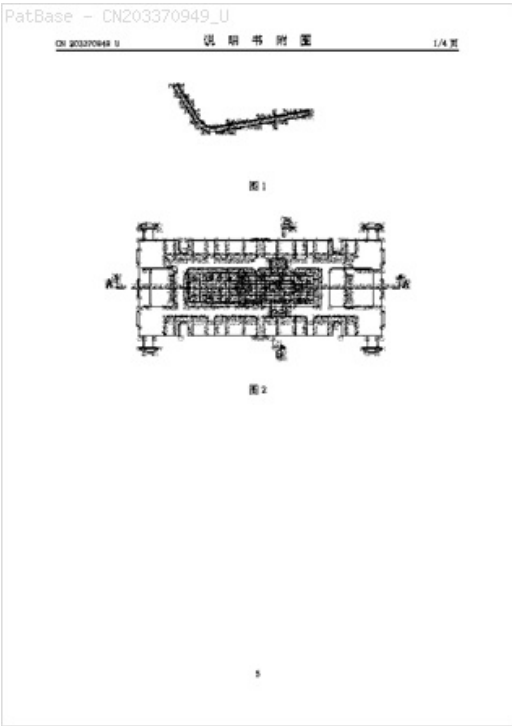
Agent(s): MACRAE AND CO; PFENNING MEINIG AND PARTNER MBB; VALLEJO JUAN PEDRO; MEHMET NAZIM AYDIN DERIS; MARSHALL AND MELHORN LLC

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LI LK LR LS LT LU LV MA MC MD MG ML MN MR MW MX MZ NA NE NI NL NO NZ OM PG PH PL PT RO RU SC SD SE SG SI SK SL SN SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

Title: COMBINATION **BENDING MOLD** STRUCTURE OF BENT PART WITH U-SHAPED CROSS SECTION

Abstract: The utility model discloses a combination **bending mold** structure of a bent part with a U-shaped cross section. The combination **bending mold** structure comprises an upper mold holder, a guiding plate, a locating plate, special-type screws, demolding springs, the bent part, an ejector, a **female mold**, a movable **male mold**, connecting rods, supporting rods, an inner guiding plate, a locating pin, a **male mold** and a lower mold holder. The ejector is connected to the upper mold holder in a hung mode through the special-type screws, the demolding springs are installed between the ejector and the upper mold holder, the **female mold** is fixed on the upper mold holder, the guiding plate, the locating plate and the **male mold** are sequentially fixed on the lower mold holder, the inner guiding plate and the locating pin are fixed on the movable **male mold**, the connecting rods are in threaded connection to the movable **male mold**, and the movable **male mold** is installed inside a cavity in the upper portion of the lower mold holder. The combination **bending mold** structure solves the problems that the production processes of the bent part are multiple and more devices and persons are occupied. The mold structure is simple and convenient to manufacture and maintain, a mold can be easily and conveniently operated in the production processes, and the production efficiency is effectively improved.

Classifications:
International (IPC 8-9): B21D37/10 (Advanced/Invention)



Family:

Publication number	Publication date	Application number	Application date
 CN203370949 U	20140101	CN201320435136U	20130722

Priority:

CN201320435136U 20130722

Probable Assignee: YTO LUOYANG FLAG AUTO BODY CO LTD

Assignee(s): (std): YTO LUOYANG FLAG AUTO BODY CO LTD

Assignee(s): YTO LUOYANG FLAG AUTO BODY CO

Inventor(s): (std): FENG LEHAI ; LI GAOXIN ; LI JUNYING ; LI YAN ; TAN ZHONGJUN ; XU QING ; YOU HAI ; ZHU JING

Title: PROTECTIVE FILM-ATTACHED FUNCTIONAL SHEET

Abstract: A protective film-attached functional sheet includes a protective film bonded to a functional sheet including aromatic polycarbonate sheets and a functional layer sandwiched between the aromatic polycarbonate sheets, the functional layer being a polyvinyl alcohol polarizing film layer, a photochromic layer, or a combination. The protective film is a polyolefin resin film that includes at least two layers: a base layer formed of a polypropylene having a melting point equal to or higher than a glass transition temperature of the aromatic polycarbonate and an adhesive layer on one surface of the base layer and being a resin composition containing a polyolefin rubber and a polyolefin having a melting point lower than the glass transition temperature but equal to or higher than 15 degrees centigrade lower than the glass transition temperature; or at least three layers: the aforementioned two layers and an intermediate layer between the base layer and the adhesive layer.

Classifications:

International (IPC 8-9): B29C45/14 B29C45/16 B29C53/04 B29D11/00 B32B25/08 B32B25/14 B32B27/08 B32B27/30 B32B27/32 B32B27/36 B32B7/06 B32B7/12 C09J123/00 C09J7/02 G02B1/04 G02B1/12 G02B1/14 G02B3/00 G02B5/23 G02B5/30 (Advanced/Invention); B29K23/00 B29K669/00 B29K69/00 B29L11/00 G02B5/23 G02B5/30 (Advanced/Non-invention)
CPC: B32B27/36 G02B1/12 B29D11/00009 B29C45/14336 B32B2250/40 B29K2629/04 B29K2623/12 B29K2069/00 B29K2023/12 B29L2011/0016 B29K2995/0034 B29K2669/00 B32B2255/10 B32B2255/24 B32B2307/42 B32B2551/00 B32B2250/24 B29C45/14 B32B27/30 C09J7/20 B32B25/08 B32B25/14 B32B2307/30 B32B2307/40 B32B2307/402 B32B2307/732 B32B2571/00 B32B2571/02 B32B27/08 B32B27/306 B32B27/32 B32B27/365 G02B5/23 G02B5/30 B29C45/16 B29C53/04 B29D11/0073 C09J7/29 C09J123/00

Family:

Publication number	Publication date	Application number	Application date
■ CN107000415 A	20170801	CN201580062704	20151118
■ EP3222420 A1	20170927	EP20150860914	20151118
■ EP3222420 A4	20180425	EP20150860914	20151118
■ JP2016080445 A1	20171109	JP20160560267T	20151118
■ KR20170086033 A	20170725	KR20177013147	20151118
■ TW201637864 A	20161101	TW20150138513	20151120
■ US2017322344 AA	20171109	US20150523782	20151118
■ WO16080445 A1	20160526	WO2015JP82420	20151118

Priority:

JP20140236743 20141121 WO2015JP82420 20151118

Probable Assignee: MGC FILSHEET CO LTD**Assignee(s):** (std): MGC FILSHEET CO LTD ; MITSUBISHI GAS CHEMICAL CO ; MITSUBISHI GAS CHEMICAL CO INC**Assignee(s):** MGC FILSHEET CO**Inventor(s):** (std): TAKANO TOSHIHIKO ; YOSHIDA RYUJI**Agent(s):** HOFFMANN EITLE; YAMASAKI YUKUZO ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Title: GLASS SHEET PRESS **BENDING MOLD**

Abstract: (Claim 1) 1. In apparatus for bending glass sheets, a **bending mold** comprising opposed mold parts aligned with each other and having complementary shaping surfaces formed on the opposed faces thereof, at least one of said mold parts comprising a permeable member having minute tortuous pores therethrough and with said shaping surface formed as one side thereof; means mounting said mold parts for relative movement toward and away from each other between a first position in which said shaping surfaces are spaced apart and a second position in which said shaping surfaces are engageable with opposite surfaces of a glass sheet disposed therebetween to press said sheet between said surfaces; means for moving said mold parts between said first and second positions; and means for introducing a fluid under pressure into said permeable member to seep therethrough and form a thin, quiescent film of fluid on said shaping surface, whereby said film acts as a separator medium between said shaping surface and a surface of a glass sheet as the latter is pressed between said mold parts.

Classifications:

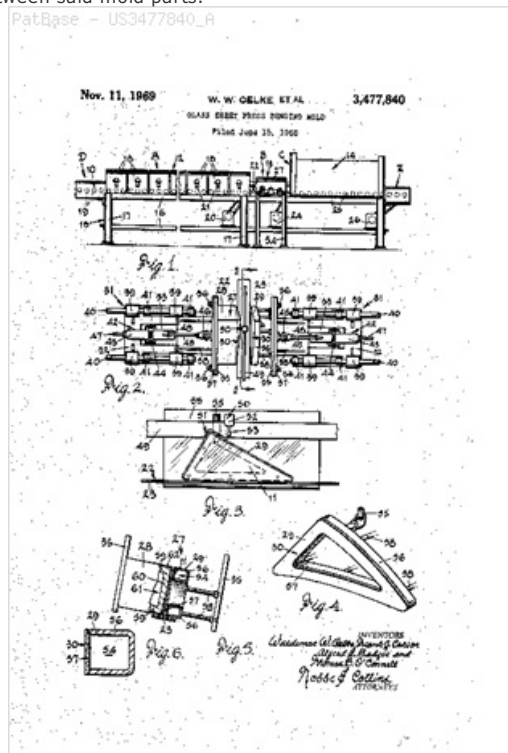
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C03B23/02 (Core/Invention)

International (IPC 1-7): C03B23/02 C03B23/03

CPC: C03B23/0315

European: C03B23/031B

US: 65/106 65/182.2 65/273 65/275 65/287 65/374.12

**Family:**

Publication number	Publication date	Application number	Application date
BE699833 A	19671213		19670613
DE1596513 A1	19710318	DE19671596513	19670607
ES341231 A1	19680616	ES19670341231	19670531
FR1530762 A	19680628	FR19670110340	19670614
GB1164685 A	19690917	GB19670024109	19670524
LU53870 A	19690422		19670613
NL6708234 A	19671218	NL19670008234	19670614
US3477840 A	19691111	US19660557728	19660615

Priority:

US19660557728 19660615 FR19670110340 19670614

Probable Assignee: LOF GLASS INC

Assignee(s): (std): LIBBEY OWENS FORD CO ; LIBBEY OWENS FORD GLASS CO

Assignee(s): LIBBEY OWENS FORD GLASS COMPANY ; LOF GLASS INC ; LIBBEY OWENS FORD COMPANY

Inventor(s): (std): BADGER ALFRED E ; BERNARD O CONNELL THOMAS ; CARSON FRANK J ; EARL BADGER ALFRED ; JACOB CARSON FRANK ; O CONNELL THOMAS B ; OELKE WALDEMAR W ; WERNER OELKE WALDEMAR

Inventor(s): ALFRED E BADGER ; THOMAS B O CONNELL ; WALDEMAR W OELKE ; FRANK J CARSON

Title: METHOD FOR BENDING THE OUTER AND THE INNER GLASS-SHEET OF BENDED SAFETY-GLASS-SHEETS AND PRESS-BENDING APPARATUS USED THEREFOR

Abstract: The method concerns bending of compound safety-glass screens consisting of internal and external glass sheets with an intermediate connector foil, on a press installation incorporating a bending punch and a bending die. Only a single bending punch is used to bend both the inner and outer glass sheets. Bending of these sheets takes place by a punch whose forming surface at least partly is adapted to the bending surface of the finished product determined by the connector foil. The corresponding press installation includes a bending station (1) with a bending punch (5) whose forming surface at least partly is adapted to the bending surface of the finished product defined by the connector foil between the inner and outer sheets.

Classifications:

International (IPC 8-9): C03B23/03 C03B23/035 C03B35/24 C03C27/12 (Advanced/Invention);

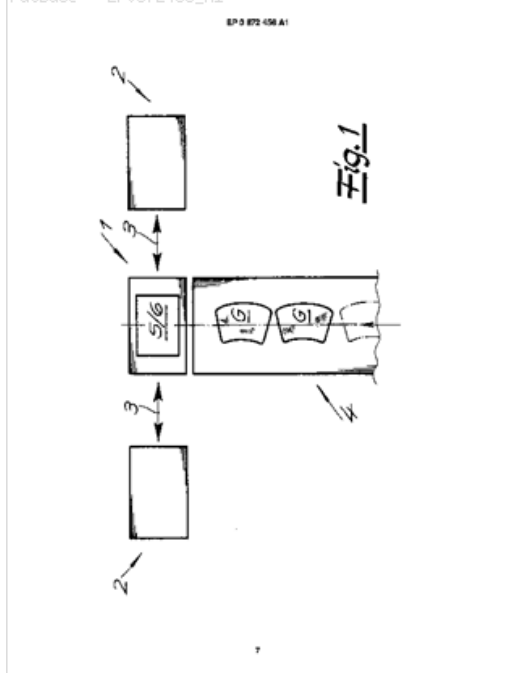
C03B23/02 C03B35/00 C03C27/12 (Core/Invention)

International (IPC 1-7): C03B23/03 C03B23/035 C03B35/14 C03B35/24 C03C27/12

CPC: B32B17/10889 C03B23/0357 C03B23/0302 C03B35/24

European: C03B23/035B C03B23/035B3 C03B23/03B C03B35/24

PatBase - EP0872456_A1



Family:

Publication number	Publication date	Application number	Application date
DE19715776 A1	19981022	DE19971015776	19970416
DE19715777 A1	19981022	DE19971015777	19970416
DE59802871 D1	20020314	DE19985002871	19980320
EP0872456 A1	19981021	EP19980105088	19980320
EP0872456 B1	20020123	EP19980105088	19980320
JP10316441 A2	19981202	JP19980104864	19980415

Priority:

DE19971015776 19970416 DE19971015776U 19970416 DE19971015777 19970416
DE19971015777U 19970416 DE19985002871 19980320

Probable Assignee: PILKINGTON AUTOMOTIVE DEUTSCHLAND GMBH

Assignee(s): (std): FLACHGLAS AUTOMOT GMBH ; FLACHGLAS AUTOMOTIVE GMBH ; PILKINGTON AUTOMOTIVE D GMBH

Assignee(s): PILKINGTON AUTOMOTIVE DEUTSCHLAND GMBH ; FLACHGLAS AUTOMOTIVE GMBH 58455 WITTEN DE

Inventor(s): (std): FUNK DIETER ; FUNK DIETER DIPL ING ; FUNK DIPL ING

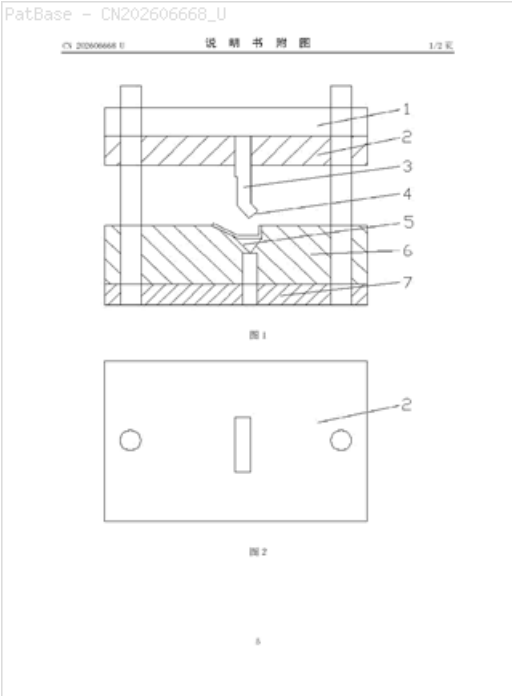
Inventor(s): FUNK DIETER DIPL ING 58452 WITTEN DE

Designated states: BE DE ES FI FR GB IT LU SE

Title: SECONDARY **BENDING MOLD** OF PROTECTIVE FRAME FOR CUTTER

Abstract: The utility model discloses a secondary **bending mold** of a protective frame for a cutter; the secondary **bending mold** of the protective frame for the cutter comprises an upper template and a bottom plate, which are fixed by guide columns, wherein an upper fixed plate is arranged on the lower end surface of the upper template; a recess is formed in the upper template; the upper end of an upper bending **male mold** is embedded in the recess; the lower end of the upper bending **male mold** extends out of the recess; a lower **female mold** is fixed on the upper end surface of the bottom plate; the upper plane of the lower **female mold** is correspondingly parallel to the lower plane of the upper fixed plate; a forming recess is formed in the upper plane of the lower **female mold** corresponding to the upper bending **male mold**; the cross section of the forming recess is V-shaped; the lower end of the upper bending **male mold** corresponding to the forming recess of the lower **female mold** is provided with a forming end consistent with the forming recess; and the forming end is matched with the forming recess.

Classifications:
International (IPC 8-9): B21D37/10 (Advanced/Invention)



Family:

Publication number	Publication date	Application number	Application date
 CN202606668 U	20121219	CN201220163469U	20120418

Priority:

CN201220163469U 20120418

Probable Assignee: SUZHOU WEIYE METAL PROD CO LTD

Assignee(s): (std): SUZHOU WEIYE METAL PROD CO LTD ; SUZHOU WEIYE METAL PRODUCTS CO LTD

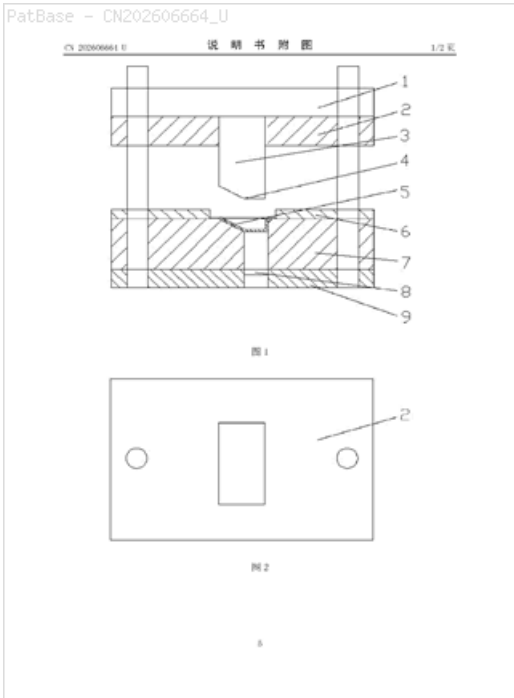
Assignee(s): SUZHOU WEIYE METAL PRODUCTS CO

Inventor(s): (std): JIN YONGYI

Title: **BENDING MOLD** OF PROTECTIVE FRAME FOR CUTTER

Abstract: The utility model discloses a **bending mold** of a protective frame for a cutter; the **bending mold** of the protective frame for the cutter comprises an upper template and a bottom plate, which are fixed by guide columns, wherein an upper fixed plate is arranged on the lower end surface of the upper template; a recess is formed in the upper template; the upper end of an upper **male mold** is embedded in the recess; the lower end of the upper **male mold** extends out of the recess; a lower **female mold** is fixed on the upper end surface of the bottom plate; a locating plate is arranged on the upper end surface of the lower **female mold**; the upper plane of the locating plate is correspondingly parallel to the lower plane of the upper fixed plate; a forming recess is formed in the upper plane of the lower **female mold** corresponding to the upper **male mold**; the lower end of the upper **male mold** corresponding to the forming recess of the lower **female mold** is provided with a forming end consistent with the forming recess; the cross section of the forming end is of U-shaped; and the lower edge of the U-shaped cross section of the forming end is parallel to the lower plane of the upper fixed plate. According to the utility model, through the adoption of the mode, a blank can be rapidly molded on a stamping mold at one time, so that the production efficiency and the product pass rate are greatly increased.

Classifications:
International (IPC 8-9): B21D37/10 (Advanced/Invention)



Family:

Publication number	Publication date	Application number	Application date
 CN202606664 U	20121219	CN201220163390U	20120418

Priority:

CN201220163390U 20120418

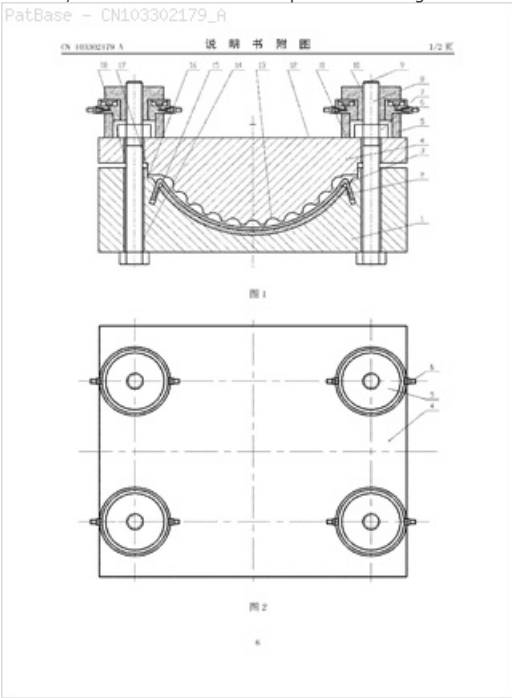
Probable Assignee: SUZHOU WEIYE METAL PROD CO LTD
Assignee(s): (std): SUZHOU WEIYE METAL PROD CO LTD ; SUZHOU WEIYE METAL PRODUCTS CO LTD
Assignee(s): SUZHOU WEIYE METAL PRODUCTS CO
Inventor(s): (std): JIN YONGYI

Title: SQUEEZING AND BENDING MOLD FOR SUPPORTING ARCH FOIL OF ELASTIC FOIL GAS RADIAL BEARING

Abstract: The invention relates to a squeezing and bending mold for a supporting arch foil of an elastic foil gas radial bearing. The squeezing and bending mold comprises a female mold. An elastic gasket is installed in the concave surface of the female mold. Metal foils are stacked on the elastic gasket. The convex surface of a male mold squeezes the metal foils and enables the metal foils to be bent. The female mold and the male mold are connected through tensioning bolts. One ends in contact with the male mold of the tensioning bolts are locked by using nuts. A hydraulic tensioner component clamps the male mold and the tensioning bolts. The hydraulic tensioner component is provided with an oil inlet for supplying oil. By adjusting the tensioning amount of the hydraulic tensioner component, elastic foil gas radial bearing supporting arch foils with different arch height parameters can be obtained. The squeezing and bending mold for the supporting arch foil of the elastic foil gas radial bearing has the characteristics that the structure is simple, the parameters are adjustable, the cost is low and the precision is high.

Classifications:

International (IPC 8-9): B21D33/00 B21D37/10 (Advanced/Invention)



Family:

Publication number	Publication date	Application number	Application date
CN103302179 A	20130918	CN201310161277	20130503
CN103302179 B	20150805	CN201310161277	20130503

Priority:

CN201310161277 20130503

Probable Assignee: UNIV XI AN JIAOTONG

Assignee(s): (std): UNIV XI AN JIAOTONG ; XI AN JIAOTONG UNIV

Inventor(s): (std): GAO YUFEI ; GENG HAIPENG ; LIU JUNLI ; QI SHEMIAO ; SHANG YAKUN ; SUN YANHUA ; YANG BAISONG ; YU LIE

Title: PROCESS FOR MAKING PRESS-IN CONNECTION TYPE CONTACT

Abstract: A press-in connection type contact, comprising a first press-in connection terminal, a second press-in connection terminal and a third press-in connection terminal, can be made by a process comprising the steps of splitting the first, second and third press-in connection terminals from one another by shear-cutting a plate member; bending the third press-in connection terminal in a first direction along an intermediate line between the first and second terminals; forming press contacting surfaces on corner portions of the first, second and third press-in terminals by swaging; and bending the third press-in terminals in a second opposite direction along the intermediate line between the first and second press-in terminals so that the press contacting surfaces are placed in an opposing relation. The terminals are thus arranged such that a conductor having a conductor cover can be pressed-in between the terminals of the contact, whereby pointed ends of terminals pierce the cover and the terminals create a pressure contact about the conductor.

Classifications:

International (IPC 8-9): A61K8/00 A61K8/04 A61K8/73 A61K8/90 A61K8/92 A61Q19/00 A61Q19/10 C08L83/04 C11D1/68 C11D1/72 C11D17/08 C11D3/18 C11D3/20 C11D3/37 H01R13/02 H01R4/24 H01R43/16 (Advanced/Invention); A61K8/00 A61K8/04 A61K8/72 A61K8/92 A61Q19/00 A61Q19/10 C08L83/00 C11D1/68 C11D1/72 C11D17/08 C11D3/18 C11D3/20 C11D3/37 H01R4/24 H01R43/16 (Core/Invention)

International (IPC 1-7): H01R4/24 H01R4/28 H01R43/16 H01R9/07

CPC: Y10T29/49204 Y10T29/49218 Y10T29/49222 H01R43/16

European: H01R43/16

US: 29/874 29/882 29/884 298/740 439/397 439/405

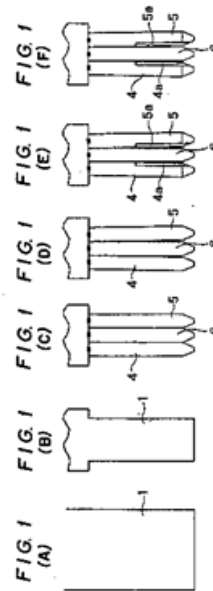
PatBase - US5423120_A

U.S. Patent

June 13, 1995

Sheet 1 of 8

5,423,120



Family:

Publication number	Publication date	Application number	Application date
DE69313799 D1	19971016	DE19936013799	19931214
EP0602937 A2	19940622	EP19930310080	19931214
EP0602937 A3	19950607	EP19930310080	19931214
EP0602937 B1	19970910	EP19930310080	19931214
JP1943465 C3	19950623	JP19920355824	19921217
JP6077470 B4	19940928	JP19920355824	19921217
JP6188059 A2	19940708	JP19920355824	19921217
KR19940017013 A	19940725	KR19930028236	19931217
TW237569 B	19950101	TW19940101547	19931214
US5423120 A	19950613	US19930169988	19931216

Priority:

JP19920355824 19921217

Probable Assignee: YAMAICHI ELECTRONICS CO LTD

Assignee(s): (std): YAMAICHI ELECTRIC CO LTD ; YAMAICHI ELECTRONICS CO LTD

Assignee(s): YAMAICHI ELECTRONICS CO LTD TOKIO TOKYO JP ; YAMAICHI ELECTRON CO LTD ; YAMAICHI ELECTRONICS CO ; YAMAICHI DENKI KK

Inventor(s): (std): KANEKO TETSUYA

Inventor(s): KANEKO TETSUYA TOKYO JP

Designated states: DE FR GB IT

Title: Glass bending press application

Abstract: Press-bending station for bending sheets of glass during the course of automated production of identical motor vehicle windows within specified batch sizes, where the glass sheets to be bent are heated in a continuous furnace to a specified bending temperature and directly after leaving the continuous furnace are fed in horizontal position with the aid of a horizontal conveyor into the press-bending station. It incorporates a male press mold and a female press mold. The male press mold is a cast full mold and consists of an aluminum alloy. The male press mold possesses heating passages for fluid heating with the aid of a liquid heat transfer medium and can be heated with sufficiently homogeneous temperature distribution to a thermal expansion temperature which is below the bending temperature. The temperature of the male press mold can be controlled and/or regulated by means of the liquid heat transfer medium. The thermal expansion temperature of the male press mold is controlled and/or regulated such that the specific thermal expansion of the male press mold and the thermal expansion of the glass sheet to be bent, placed centrally on the female press mold at bending temperature, practically correspond.

Classifications:

International (IPC 8-9): C03B11/02 C03B23/023 C03B23/03 C09K11/00 H05B33/00 (Advanced/Invention);

C03B23/023 (Advanced/Non-invention);

C03B23/02 C09K11/00 H05B33/00 (Core/Invention)

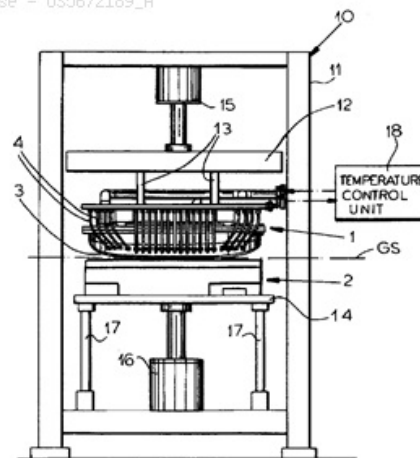
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CPC: C03B23/0307

European: C03B23/03 C03B23/03D

US: 65/106 65/162 65/273 65/287 65/288 65/29.19 65/291.9 65/356 65/374.12

PatBase - US5672189_A



Family:

Publication number	Publication date	Application number	Application date
AT155448 E	19970815	AT19950105485T	19950412
AU199516387 A1	19951026	AU19950016387	19950412
AU681760 B2	19970904	AU19950016387	19950412
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CZ286770 B6	20000712	CZ19950000931	19950412
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DK0677488 T3	19970901	DK19950105485T	19950412
EP0677488 A2	19951018	EP19950105485	19950412
EP0677488 A3	19960124	EP19950105485	19950412
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TH21472 A	19961029	TH19951000826	19950417
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TW264458 B	19951201	TW19950104251	19950428
US5672189 A	19970930	US19950422500	19950412
ZA9503023 A	19960105	ZA19950003023	19950412

Priority:

DE19944412747 19940415

CA19952146887 19950412

DE19955000378 19950412

Probable Assignee: PILKINGTON DEUTSCHLAND AG

Assignee(s): (std): FLACHGLAS AG ; FLAKHGLAS AG

Assignee(s): FUNK DIETER ; PILKINGTON DEUTSCHLAND AG ; WENNING ROLF ; FLACHGLAS AG 90766 FUERTH DE ; FLACHGLAS AKTIENGESELLSCHAFT ; Flachglas Aktiengesellschaft. ; BRANS WALTER ; BRUNS DIETER

Inventor(s): (std): BRUNS DIETER ; BRUNS DIETER DIPL ING ; BRUNS DITER ; BUARUTAA BURANSU ; DEIITAA BURANSU ; DEIITAA FUNKU ; BRANS VAL TER ; BRANS WALTER ; BRANS WALTER DIPL ING ; FUNK DIETER ; FUNK DIETER DIPL ING ; FUNK DITER ; RORUFU BUENINGU ; VENNING ROL F ; WENNING ROLF ; WENNING ROLF DIPL ING ; DITER FUNK ; DITER BRUNS ; VAL TER BRANS ; ROL F VENNING

Inventor(s): FUNK DIETER DIPL ING 29379 WITTEN DE ; BRUNS DIETER DIPL ING 47495 RHEINBERG DE ; BRANS WALTER DIPL ING 45659 RECKLINGHAUSEN DE ; WENNING ROLF DIPL ING D 46397 BOCHOLT DE ; FUNK DIETER DIPL ING D 29379 WITTEN DE ; BRUNS DIETER DIPL ING D 47495 RHEINBERG DE ; BRANS WALTER DIPL ING D 45659 RECKLINGHAUSEN DE ; WENNING ROLF DIPL ING 46397 BOCHOLT DE ; Walter ; WALTER BRANS ; Walter8. PAJEEPORN ; Wenning ; Rolf ; ROLF WENNING ; Bruns ; Dieter ; DIETER BRUNS ; DIETER FUNK ; Brans

Agent(s): FISHER ADAMS KELLY CALLINANS; SPRUSON AND FERGUSON; KIRBY EADES GALE BAKER

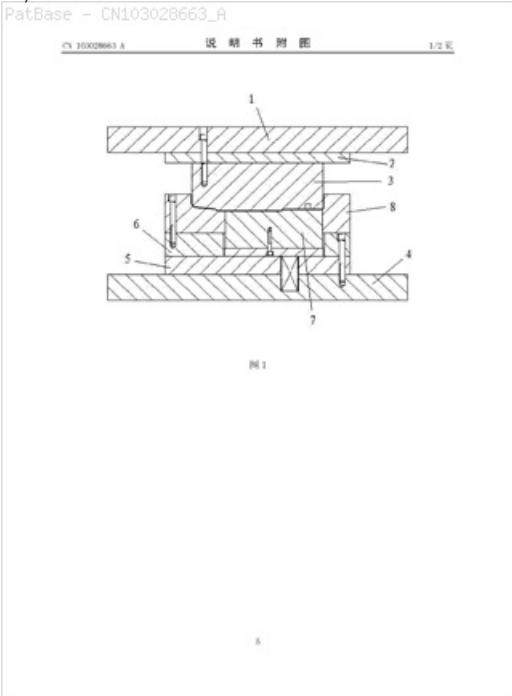
Designated states: AT BE CH DE DK ES FR GB GR IE IT LI LU NL PT SE

Title: **BENDING MOLD**

Abstract: The invention relates to a processing mold of an automobile component, in particular to a **bending mold**. An upper template is arranged at the bottom of an upper mold, and a **male mold** is arranged at the bottom of the upper template; the upper mold, the upper template and the **male mold** are connected by bolts, and a first lower template is arranged at the upper part of a lower mold; a second lower template with a square groove is arranged at the upper part of the first lower template, and a **female mold** is arranged at the upper part of the second lower template and is sleeved at the outer side of a third lower template; the third lower template is arranged in the square groove of the second lower template, and the **female mold** is provided with a groove; three triangular lug bosses are arranged in the groove, and the two closer sides of the adjacent triangular lug bosses are parallel to each other; and the bottom end of the **male mold** is provided with an end surface matched with the **female mold**. The **bending mold** provided by the invention has the advantages that the structural design is reasonable, and the material selection meets the mold design requirement. The groove of the **female mold** has a novel design, high processing efficiency, good bending forming effects and wide adaptability.

Classifications:

International (IPC 8-9): B21D37/10 (Advanced/Invention)



Family:

Publication number	Publication date	Application number	Application date
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Priority:

CN201210540587 20121214

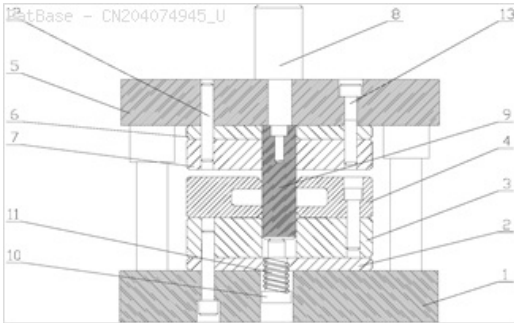
Probable Assignee: WUHU ZHONGSHAN SCIENCE AND TECHNOLOGY CO LTD
Assignee(s): (std): WUHU ZHONGSHAN SCIENCE AND TECHNOLOGY CO LTD
Assignee(s): WUHU ZHONGSHAN SCIENCE AND TECHNOLOGY CO
Inventor(s): (std): ANG BIN ; CHU PEI ; QIAN BINGNAN

Title: **BENDING MOLD** FOR U-SHAPED PARTS

Abstract: The utility model relates to the technical field of molds, in particular to a **bending mold** for U-shaped parts. The **bending mold** for U-shaped parts comprises a lower mold part, an upper mold part and a guide part located between the upper mold part and the lower mold part. The lower mold part comprises a lower mold base, a **female mold** cushion plate located on the upper surface of the lower mold base, a concave template located on the upper surface of the concave mold cushion plate, and a fixed discharge plate located on the upper surface of the concave template. The fixed discharge plate is of a rectangular structure, and a hole shaped like a Chinese character 'zhong' is formed in the middle of the fixed discharge plate. The upper mold part comprises an upper mold base, an upper mold cushion plate located on the lower surface of the upper mold base, and a **male mold** fixing plate located on the lower surface of the upper mold cushion plate. A mold shank is arranged at the top of the upper mold base. The bottom of the mold shank is fixedly connected with a **male mold** through a fastening bolt, and the **male mold** can penetrate through the upper mold base, the upper mold cushion plate, the **male mold** fixing plate, the fixed discharge plate and the concave template in sequence. A discharge bolt capable of making contact with the **male mold** is arranged at the bottom of the lower mold base. The discharge bolt is sleeved with a rectangular spiral spring. The **bending mold** can guarantee the qualified rate of formed U-shaped parts.

Classifications:

International (IPC 8-9): B21D37/10 B21D45/06 (Advanced/Invention)



Family:

Publication number	Publication date	Application number	Application date
 CN204074945 U	20150107	CN201420603028U	20141017

Priority:

CN201420603028U 20141017

Probable Assignee: ZHANGJIAGANG LEYU BAIRUN PLASTIC MOLD FACTORY

Assignee(s): (std): ZHANGJIAGANG LEYU BAIRUN PLASTIC MOLD FACTORY

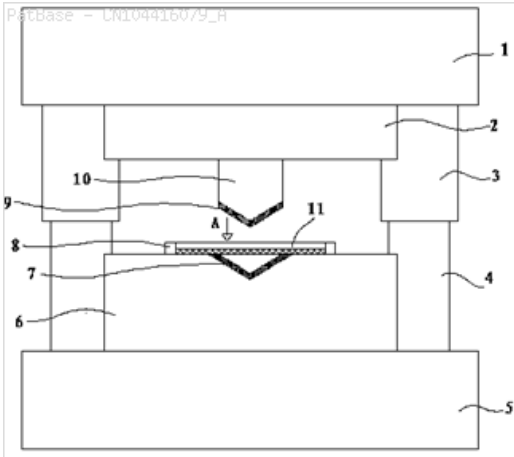
Assignee(s): ZHANGJIAGANG CITY MUSIC YU BAIRUN PLASTIC MOLD FACTORY

Inventor(s): (std): WANG MING

Title: DISMOUNTABLE PROTECTING SLEEVE **BENDING MOLD**

Abstract: The invention discloses a dismountable protecting sleeve **bending mold**, which comprises an upper mold seat and a lower mold seat in corresponding arrangement, wherein the lower surface of the upper mold seat is provided with a pad block, the lower surface of the pad block is fixedly provided with a **bending mold**, the outer surface of the lower end of the **bending mold** is fixedly provided with a bending **male mold** protecting sleeve, the upper surface of the lower mold seat is provided with a bending **female mold** corresponding to the bending **male mold**, and the surface of the bending **female mold** is fixedly provided with a bending **female mold** protecting sleeve. The dismountable protecting sleeve **bending mold** has the advantages that the design is reasonable, the structure is simple, the cost is reduced, the product quality is stable, and the popularization is convenient.

Classifications:
International (IPC 8-9): B21D37/10 (Advanced/Invention)
CPC: B21D37/10



Family:

Publication number	Publication date	Application number	Application date
 CN104416079 A	20150318	CN201310408867	20130911

Priority:
CN201310408867 20130911

Probable Assignee: XU CHUANHUI
Assignee(s): (std): XU CHUANHUI
Inventor(s): (std): XU CHUANHUI

Title: SIDE **BENDING MOLD** FOR BACK PLATE

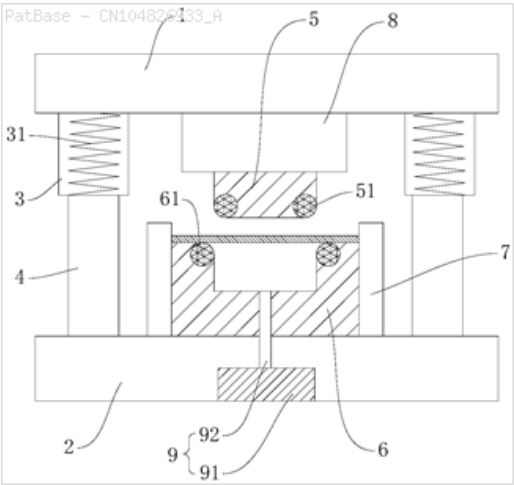
Abstract: The invention discloses a side **bending mold** for a back plate. The side **bending mold** for the back plate comprises an upper mold plate and a lower mold plate, wherein the upper mold plate is provided with a guide sleeve; the lower mold plate is provided with a guide column; the guide column can move up and down in the guide sleeve; a return spring is arranged in the guide sleeve; the upper mold plate is connected with a **male mold**; a first roller is arranged at each of the two ends of the lower end surface of the **male mold**; the lower mold plate is connected with a **female mold**; a second roller is arranged at each of the two ends of the upper end surface of the **female mold**; stop blocks used for positioning a workpiece are arranged at the parts, positioned on the two sides of the **female mold**, of the lower mold plate. During mold closing, the upper mold plate moves down relative to the lower mold plate, the workpiece between the two stop blocks is bent downwards, and after the workpiece is bent, the upper mold plate moves up and returns under the action of the return spring. The side **bending mold** for the back plate is simple in structure and convenient to operate, the surface abrasion caused by sliding of the workpiece at the corner is avoided, and the bending quality of the workpiece is guaranteed. The side **bending mold** for the back plate is simple in structure and convenient to operate; moreover, the surface abrasion caused by bending of the workpiece can be avoided, and the bending quality of the workpiece is improved.

Classifications:

International (IPC 8-9): B21D37/10 B21D37/12

B21D45/02 (Advanced/Invention)

CPC: B21D37/10 B21D37/12 B21D45/02



Family:

Publication number	Publication date	Application number	Application date
 CN104826933 A	20150812	CN201510221296	20150504

Priority:

CN201510221296 20150504

Probable Assignee: KUNSHAN DIANZIYU ELECTRIC PRODUCTS CO LTD

Assignee(s): (std): KUNSHAN DIANZIYU ELECTRIC PRODUCTS CO LTD

Assignee(s): KUNSHAN ELECTRONIC FEATHER ELECTRIC IND CO LTD ; KUNSHAN DIANZIYU ELECTRIC PRODUCTS CO

Inventor(s): (std): LI GUOXIN

Title: PACKAGE OF HEAT-BENT POLARIZING SHEET AND INJECTION-MOLDED POLARIZING LENS

Abstract: A package of a heat-bent polarizing sheet for producing an injection-molded polarizing lens, in which a laminated polarizing sheet prepared by bonding a transparent plastic sheet onto each of two sides of a polarizing film formed of a uniaxially stretched polyvinyl alcohol resin film with an adhesive layer interposed therebetween is used as an individual laminated polarizing sheet that has an original plate shape for individual lenses, the individual laminated polarizing sheet is heat-bent to form a spherical aspherical surface under heating to prepare a heat-bent polarizing sheet, the heat-bent polarizing sheet is set onto a mold, and a transparent resin for lenses is injection-molded onto a concave surface of the heat-bent polarizing sheet. The heat-bent polarizing sheet is a heat-bent polarizing sheet that is stored or transported in a dampproof package and can be used in injection molding without performing preliminary drying as a pretreatment of injection molding.

Classifications:

International (IPC 8-9): B29C45/00 B65D77/04 B65D81/20 B65D81/24 B65D81/26 B65D85/38 C08L29/04 G02B1/08 G02B5/30 G02C7/02 G02C7/12 (Advanced/Invention)

CPC: B65D81/24 B65D81/26 B65D85/38 G02B5/30 G02C7/02 G02C7/12 G02B1/08 B29C45/0001 C08L29/04 B65D77/04

Family:

Publication number	Publication date	Application number	Application date
■ CN107108110 A	20170829	CN201580059063	20151016
■ EP3214018 A1	20170906	EP20150855236	20151016
■ EP3214018 A4	20180627	EP20150855236	20151016
■ JP2016067937 A1	20171109	JP20160556500T	20151016
■ KR20170078641 A	20170707	KR20177011370	20151016
■ TW201628940 A	20160816	TW20150134886	20151023
■ US2017343703 AA	20171130	US20150521081	20151016
■ WO16067937 A1	20160506	WO2015JP79328	20151016

Priority:

JP20140222899 20141031 WO2015JP79328 20151016

Probable Assignee: MGC FILSHEET CO LTD

Assignee(s): (std): MGC FILSHEET CO LTD ; MITSUBISHI GAS CHEMICAL CO ; WINTEC INC

Assignee(s): MITSUBISHI GAS CHEMICAL CO INC ; CO LTD WINTECH ; MGC FILSHEET CO

Inventor(s): (std): TAKANO TOSHIHIKO ; YOSHIDA RYUJI

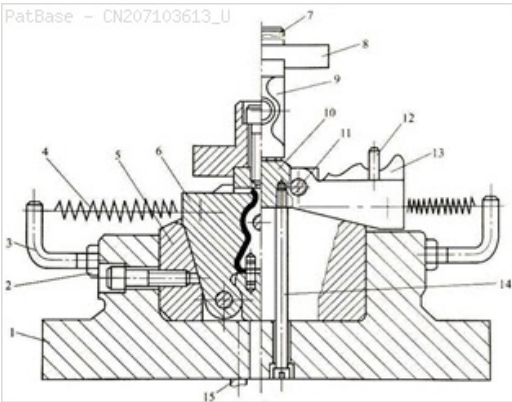
Agent(s): HOFFMANN EITLE; YAMASAKI YUKUZO ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Title: MULTIDIRECTIONAL BENDING DIE OF OVER -AND -UNDER TYPE

Abstract: The utility model discloses a multidirectional bending die of over -and -under type, including die socket, extension spring round pin, extension spring, slide wedge, first die centering block, die shank, punch plate, terrace die, backing -out punch, second die centering block, the centre of die socket is square groove, and the both ends of die socket are provided with the bearing, and the slide wedge is fixed on the inside wall of bearing, is provided with the extension spring round pin on the bearing, and extension spring one end is connected on the extension spring round pin, the end connection of the other end and first die centering block, and the other end of first die centering block articulates on the backing -out punch, sets up second die centering block on the first die centeringblock, and punch plate's top is connected in the die shank bottom, and the terrace die is installed on punch plate, the terrace die cooperates with the working face of second die centering block. Theutility model provides a pair of multidirectional bending die of over -and -under type, simple structure, convenient to use, the product quality that takes shape is good.

Classifications:
International (IPC 8-9): B21D37/10 B21D37/12
B21D43/00 (Advanced/Invention)
CPC: B21D37/10



Family:

Publication number	Publication date	Application number	Application date
■ CN107150083 A	20170912	CN201710516809	20170629
■ CN207103613 U	20180316	CN201720773467U	20170629

Priority:

CN201710516809 20170629 CN201720773467U 20170629

Probable Assignee: SUZHOU HUALAI OPTOELECTRONIC INSTR CO LTD

Assignee(s): (std): SUZHOU HUALAI OPTOELECTRONIC INSTR CO LTD ; SUZHOU HUALAI PHOTOELECTRIC INSTR CO LTD ; SUZHOU HUALAI PHOTOELECTRIC INSTRUMENT CO LTD

Assignee(s): SUZHOU HUALAI PHOTOELECTRIC INSTRUMENT CO ; SUZHOU HUALAI OPTOELECTRONIC INSTRUMENT CO

Inventor(s): (std): XUE WENYING

Title: APPARATUS FOR BENDING AND TEMPERING SHEET GLASS

Abstract: A glass sheet such as an automobile window glass sheet is bent to shape and tempered at one stage by a sheet glass bending and tempering apparatus. The sheet glass bending and tempering apparatus has solid contact members for pressing a glass sheet, which has been heated nearly to its softening point, to a desired shape and depriving the glass sheet of heat to cool the glass sheet quickly, the solid contact means having a contact surface for contacting the glass sheet and depriving the glass heat of heat therethrough. The contact surface has a plurality of grooves defined therein, and a plurality of air outlet ports defined in each of the grooves, for applying cooling air to the glass sheet, and a plurality of air inlet ports defined in each of the grooves, for drawing the air applied to the glass sheet. When the opposite surfaces of the glass sheet are pressed by the solid contact members, the pressure is temporarily reduced and then increased again to cool the glass sheet. The peripheral edge of the glass sheet, which requires a high degree of shaping accuracy, is cooled quickly by the solid contact members, and the central region of the glass sheet, which requires high optical properties, is cooled quickly by air jets.

Classifications:

International (IPC 8-9): C03B23/03 C03B23/031 C03B27/004 C03B27/04 C03B27/044 C03B27/052 (Advanced/Invention); C03B23/02 C03B27/00 C03B27/004 (Core/Invention)

International (IPC 1-7): C03B23/03 C03B23/031 C03B27/004 C03B27/04 C03B27/044 C03B27/048 C03B27/052

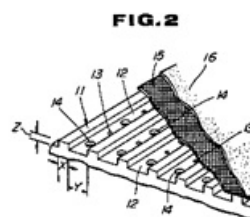
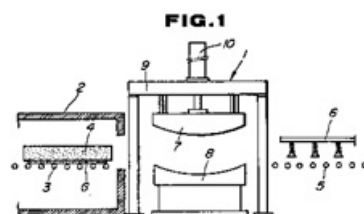
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European: C03B23/031 C03B23/03B C03B23/03C C03B27/004 C03B27/044B2 C03B27/04A C03B27/052 C03B40/00F

US: 65/103 65/114 65/273 65/348 65/351

PatBase - US5139552_A

U.S. Patent Aug. 18, 1992 Sheet 1 of 8 5,139,552

**Family:**

Publication number	Publication date	Application number	Application date
CA2041059 AA	19910606	CA19902041059	19901205
EP0431895 A2	19910612	EP19900313157	19901204
EP0431895 A3	19910821	EP19900313157	19901204
JP1994317 C3	19951122	JP19890320203	19891208
JP2766355 B2	19980618	JP19890316277	19891205
JP3177326 A2	19910801	JP19890316277	19891205
JP3183628 A2	19910809	JP19890320203	19891208
JP3187939 A2	19910815	JP19890328949	19891219
JP7029794 B4	19950405	JP19890320203	19891208
US5139552 A	19920818	US19900622731	19901205

Priority:

JP19890316277 19891205 JP19890320203 19891208 JP19890320203 19891208
JP19890328949 19891219 CA19902041059 19901205

Probable Assignee: NIPPON SHEET GLASS CO LTD**Assignee(s):** (std): NIPPON SHEET GLASS CO LTD**Assignee(s):** NIPPON SHEET GLASS CO LTD A CORP OF JAPAN ; YOSHIZAWA HIDEO ; KASUGAI TORU ; NIPPON ITA GARASU KK ; NIPPON SHEET GLASS CO**Inventor(s):** (std): KASUGAI TORU ; KASUGAI TORU C O NIPPON SHEET ; YOSHIZAWA HIDEO ; YOSHIZAWA HIDEO C O NIPPON SHE**Inventor(s):** YOSHIZAWA HIDEO C O NIPPON SHEET GLASS CO ; KASUGAI TORU C O NIPPON SHEET GLASS CO ; KASUGAI TOORU**Agent(s):** JOHNSON DOUGLAS S QC**Designated states:** DE FR GB IT

Title: Method of and apparatus for bending relatively thin glass sheets

Abstract: A method of and apparatus for bending and tempering a relatively thin glass sheet comprising heating the glass sheet to its softening point in a heating chamber, rapidly conveying the sheet from the heating chamber to and between a pair of mold press members for immediate press shaping therebetween, and then quickly chilling the sheets below the annealing temperature range of the glass in a two-stage operation by applying a cooling medium successively under relatively high and low pressures to the opposite surfaces of the sheet.

Classifications:

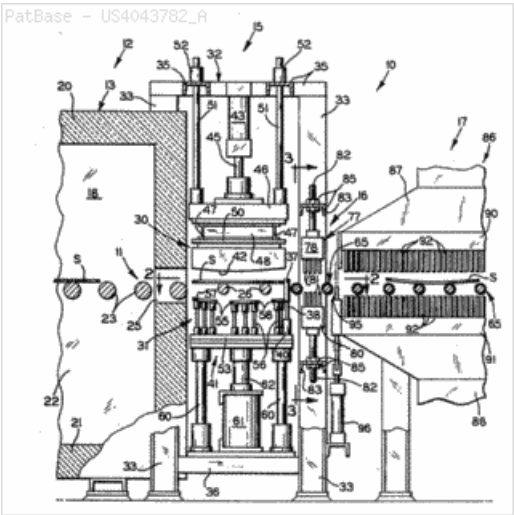
International (IPC 8-9): C03B23/03 C03B27/044 (Advanced/Invention)

International (IPC 1-7): C03B27/00

CPC: C03B23/03 C03B27/0404 C03B27/0442 C03B40/005 C03B2225/02

European: C03B23/03 C03B27/044B C03B27/04A C03B40/00F

US: 65/104 65/227 65/273



Family:

Publication number	Publication date	Application number	Application date
US4043782 A	19770823	US19750589008	19750623

Priority:

US19750589008 19750623

Probable Assignee: LOF GLASS INC

Assignee(s): (std): LIBBEY OWENS FORD CO

Assignee(s): LIBBEY OWENS FORD COMPANY ; LOF GLASS INC

Inventor(s): (std): BAMFORD DECEASED ROBERT P ; BAMFORD ROBERT P ; HERRINGTON RICHARD A ; OELKE WALDEMAR W

Title: IMPROVEMENT IN FABRICATING BENT LAMINATED ASSEMBLIES

Abstract: 788,770. Shaping glass. PITTSBURGH PLATE GLASS CO. Feb. 20, 1956 [March 2, 1955], No. 5146/56. Class 56. In a method of preparing glass sheets for lamination into curved shapes by simultaneously subjecting the sheets to glass softening temperatures while mounted on a single glass shaping mould, the sheets are subjected to different thermal histories so that they have different internal viscosities before they are bent. Preferably the upper sheet 10, which may be thicker than the lower sheet 12, is first tempered to reduce its viscosity and is then mounted over the sheet 12 on the shaping mould M, a suitable separating or parting material 14 such as mica or diatomaceous earth being applied to the upper surface of sheet 12. For sheets of equal thickness, a partial temper may be imparted to the lower sheet and a more severe temper to the upper sheet. For the curved windscreen 20 comprising sheets 22 and 26 of glass and thermoplastic transparent interlayer 24, sheet 22 will be tempered if a male mould is used, but sheet 26 if a female mould is used, the tempering ensuring even and intimate contact between the sheets 22, 26 over the varying curvatures 30 and 32 and over similar varying curvatures at right angles to the section shown.

Classifications:

International (IPC 8-9): B29C53/04 B32B17/10

C03B23/03 (Advanced/Invention);

B29C53/00 B32B17/06 C03B23/02 (Core/Invention)

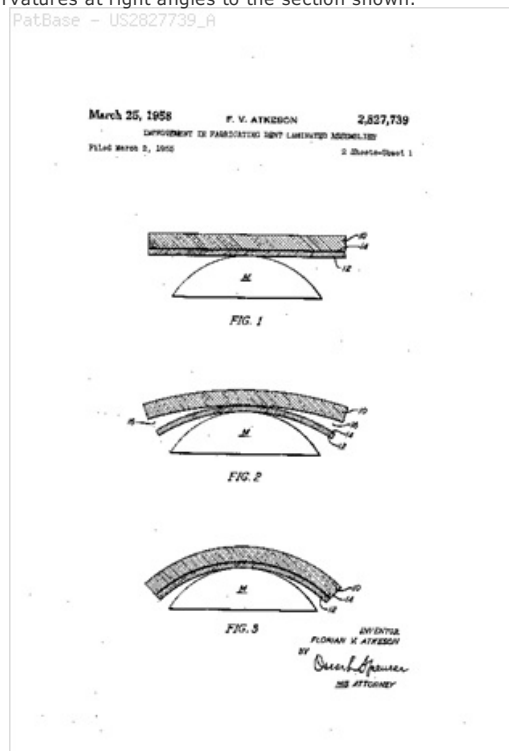
International (IPC 1-7): B29C53/04 B32B17/10 C03B23/03

CPC: B29C53/04 B32B17/10036 B32B17/10889 C03B23/0302

European: B29C53/04 B32B17/10C4 B32B17/10L14 C03B23/03B

US: 156/102 156/99 296/84.1 65/104 65/107 65/24 D12/183

PatBase - US2827739_A

**Family:**

Publication number	Publication date	Application number	Application date
BE545684 A	00000000		00000000
CH330409 A	19580615		19560301
ES227025 A1	19560916	ES19560227025	19560301
FR1142184 A	19570913		19560228
GB788770 A	19580108	GB19560005146	19560220
US2827739 A	19580325	US19550491719	19550302

Priority:

US19550491719 19550302

Probable Assignee: PITTSBURGH PLATE GLASS CO

Assignee(s): (std): PITTSBURGH PLATE GLASS CO

Assignee(s): PITTSBURGH PLATE GLASS COMPANY

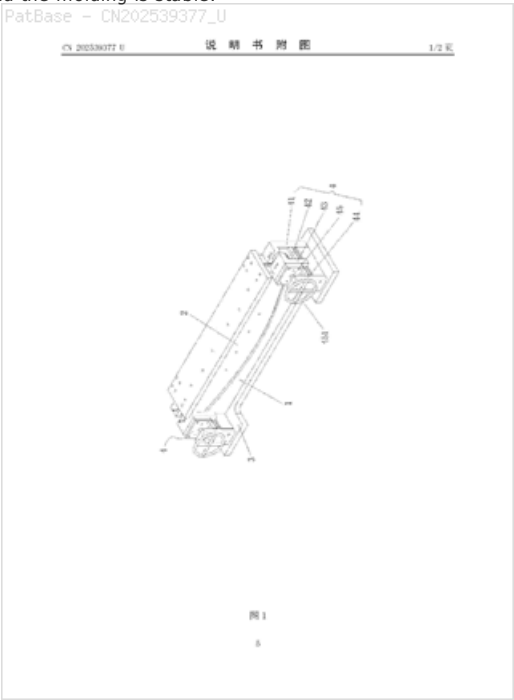
Inventor(s): (std): FLORIAN VICTOR ATKESON ; VICTOR ATKESON FLORIAN

Inventor(s): ATKESON FLORIAN VICTOR

Title: **Bending mold** for front pillar profile of excavator cab

Abstract: The utility model discloses a **bending mold** for a front pillar profile of an excavator cab. The **bending mold** comprises a lower **male mold** and an upper **female mold**, wherein the lower **female mold** is fixedly arranged on a bottom plate, and clamping mechanisms for end parts of profiles to be bent are arranged at both sides of the lower **female mold** on the bottom plate; preferably, the clamping mechanism comprises a fixed clamping block arranged on the bottom plate, a track vertical to the lower **female mold**, and a movable clamping block moving along the track, and a fixed plate is arranged on the bottom plate at the same side of the movable clamping block; a threaded hole the axis of which is parallel to the track is arranged on the fixed plate, and a screw is arranged in the threaded hole; one end of the screw and the movable clamping block are fixed, and the other end of the screw is provided with a rotating handle; and a pad matched with the shape of the end part of the profile to be bent is also arranged between the fixed clamping block and the movable clamping block. According to the **bending mold**, after the profile to be bent is bent, the amount of springback is smaller, and the molding is stable.

Classifications:
International (IPC 8-9): B21D11/22 B21D37/10 (Advanced/Invention)



Family:

Publication number	Publication date	Application number	Application date
 CN202539377 U	20121121	CN201220147978U	20120410

Priority:

CN201220147978U 20120410

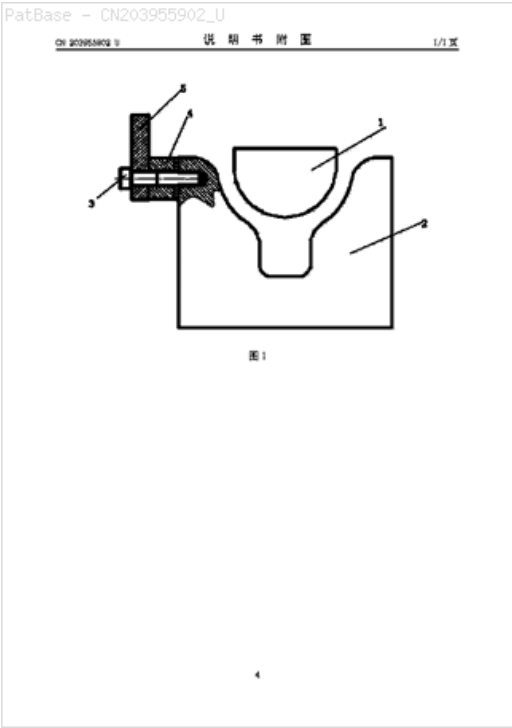
Probable Assignee: XIAMEN YULONG MACHINERY CO LTD
Assignee(s): (std): XIAMEN YULONG MACHINERY CO LTD
Inventor(s): (std): QINGSONG SU ; XIAODONG MAO
Inventor(s): MAO XIAODONG ; SU QINGSONG

Title: **BENDING MOLD** PROVIDED WITH POSITIONING DEVICE

Abstract: The utility model discloses a **bending mold** provided with a positioning device. The **bending mold** comprises a **male mold** and a **female mold**, wherein an adjusting gasket and a positioning block are fixedly connected onto the side wall of the **female mold** through a positioning bolt, the positioning block is fixedly arranged on the rack, an internal thread is formed on the side wall of the **female mold**, and the positioning bolt and the internal thread are in thread connection. According to the **bending mold**, the positioning device is added, and the **female mold** is fixed, so that the bending accuracy of a workpiece in the bending process is guaranteed.

Classifications:

International (IPC 8-9): B21D37/10 B21D7/06 (Advanced/Invention)



Family:

Publication number	Publication date	Application number	Application date
 CN203955902 U	20141126	CN201420360343U	20140630

Priority:

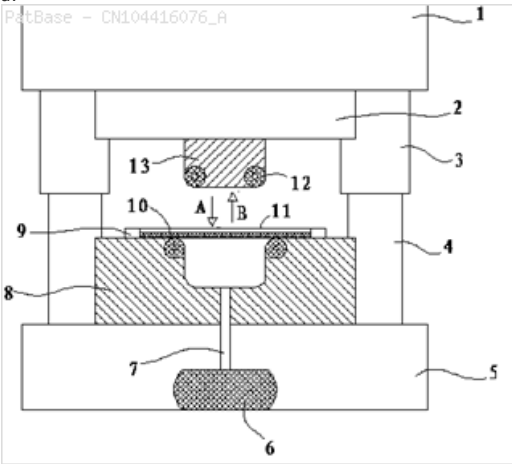
CN201420360343U 20140630

Probable Assignee: CHANGLI FORGING CO LTD
Assignee(s): (std): CHANGLI FORGING CO LTD
Assignee(s): LEE CHANG FORGING CO LTD ; CHANGLI FORGING CO
Inventor(s): (std): CHEN ZHENGYI ; YANG KUIQI ; ZHANG BIN

Title: **BENDING MOLD** CAPABLE OF PREVENTING SCRATCH DAMAGE OF BENDING ELEMENT

Abstract: The invention discloses a **bending mold** capable of preventing the scratch damage of a bending element. The **bending mold** comprises an upper mold and a lower mold, wherein the upper mold consists of an upper mold seat, a pad block, a guide sleeve and a **male mold**, the lower surface of the upper mold seat is provided with the pad block, the lower surface of the pad block is fixedly provided with the **male mold**, the lower surface of the mold seat is provided with the guide sleeve, the lower mold consists of a guide post, a lower mold seat, a material jacking device, a **female mold**, a side material blocking block and a back material blocking block, the guide post is arranged on the upper surface of the lower mold seat, the **female mold** is arranged on the upper surface of the lower mold seat, and the side material blocking block and the back material blocking block are fixedly arranged on the upper surface of the **female mold**. The **bending mold** has the advantages that the design is reasonable, the structure is simple, and the appearance quality is improved.

Classifications:
International (IPC 8-9): B21D37/10 (Advanced/Invention)
CPC: B21D37/10



Family:

Publication number	Publication date	Application number	Application date
 CN104416076 A	20150318	CN201310408862	20130911

Priority:

CN201310408862 20130911

Probable Assignee:

XU CHUANHUI

Assignee(s): (std):

XU CHUANHUI

Inventor(s): (std):

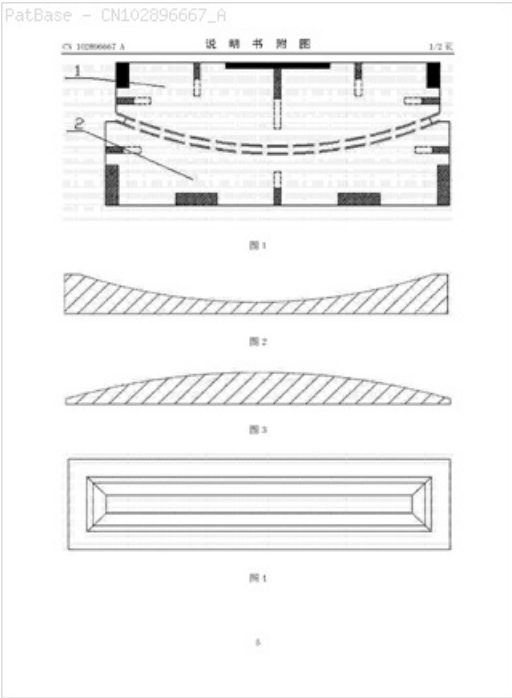
XU CHUANHUI

Title: PROCESS FOR MANUFACTURING ARC MOLDABLE MOLD-PRESSING DOOR

Abstract: The invention discloses a process for manufacturing an arc moldable mold-pressing door. The process comprises the following steps of: 1, dividing a door panel into a plurality of layers along the thickness of the door panel; 2, manufacturing a **bending mold** with target radian; 3, adhering the layers of the door panel by using glue, and placing the door panel on a lower mold part of the **bending mold**; adjusting parameters of a bender and bending the door panel; 5, manufacturing a pair of **female mold** and **male mold** of which the radian is matched with that of the door panel; and 6, placing the **female mold** on a molding press, placing the door panel on the **female mold** to coat a film, placing the **male mold** on the molding press, and placing the door panel on the **male mold** to coat a film again. By the process for manufacturing the arc moldable mold-pressing door, a front surface of an arc panel can be carved and molded, an arc mold-pressing moldable machining process is provided, and products in a mold-pressing series can be rich in structure and appearance.

Classifications:

International (IPC 8-9): B27D1/08 (Advanced/Invention)



Family:

Publication number	Publication date	Application number	Application date
CN102896667 A	20130130	CN201210440530	20121107
CN102896667 B	20150610	CN201210440530	20121107

Priority:

CN201210440530 20121107

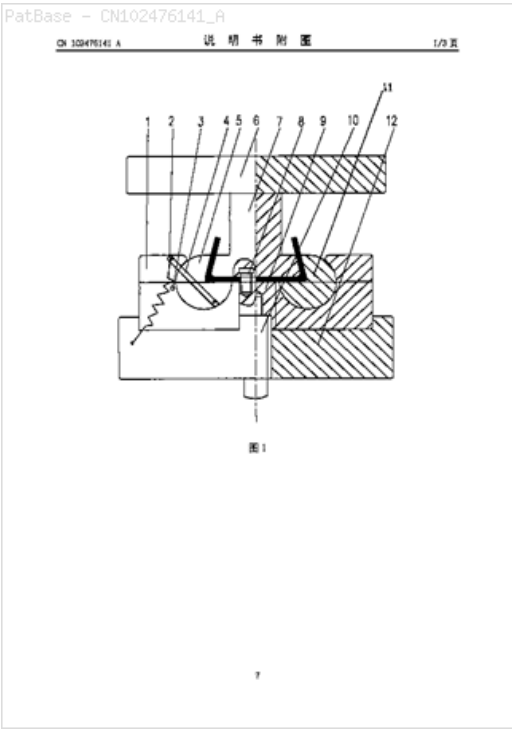
Probable Assignee: HANGZHOU JIUDA DOORS CO LTD
Assignee(s): (std): HANGZHOU JIUDA DOORS CO LTD
Assignee(s): HANGZHOU JIUDA DOORS CO
Inventor(s): (std): CHENG SHUHUA ; JIA TINGLING ; QU BINJIE

Title: DOVETAIL PLATE FORMING MOLD AND USE METHOD THEREOF

Abstract: The invention provides a dovetail plate forming mold, which comprises a **male mold** and a **female mold**, wherein the **male mold** and the **female mold** are mutually matched, a first forming region and a second forming region are formed between the **male mold** and the **female mold**, and the first forming mold and the second forming mold respectively comprise a dovetail **bending mold**. The dovetail plate forming mold has the advantages that the structure is simple, the operation is easy, and the energy consumption is low.

Classifications:

International (IPC 8-9): B21D37/10 B21D5/06 (Advanced/Invention)



Family:

Publication number	Publication date	Application number	Application date
 CN102476141 A	20120530	CN201010557367	20101122

Priority:

CN201010557367 20101122

Probable Assignee: BEIQI FOTON MOTOR CO LTD

Assignee(s): (std): BEIQI FOTON MOTOR CO LTD

Assignee(s): BEIQI FOTON MOTOR CO

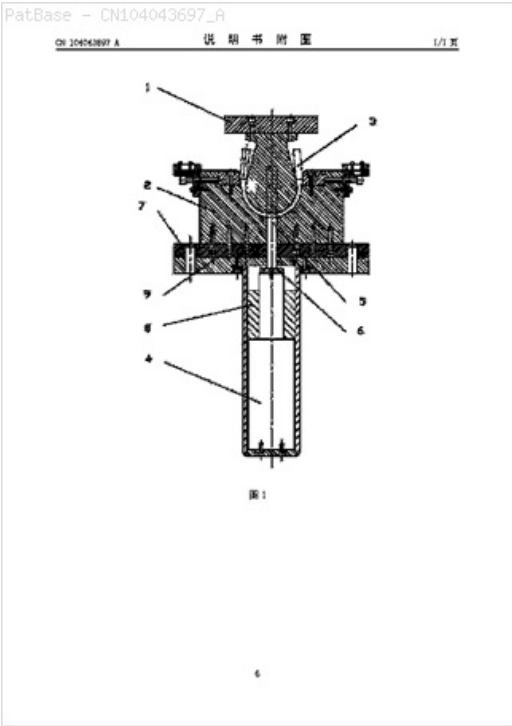
Inventor(s): (std): GENZHI ZHANG ; HAIYUN FAN ; XINGKUI WANG ; YUFU TANG ; YUNFEI SHANGGUAN

Inventor(s): ZHANG GENZHI ; SHANGGUAN YUNFEI ; TANG YUFU ; WANG XINGKUI ; FAN HAIYUN

Title: U-SHAPED SCREW BOLT BENDING EQUIPMENT

Abstract: The invention discloses U-shaped screw bolt bending equipment, which comprises a **bending mold** and a press machine, wherein the **bending mold** comprises a **male mold** and a **female mold**, the **female mold** is fixedly arranged on a static mold seat, the **male mold** is arranged on a movable mold seat, the movable mold seat is driven by the press machine, the U-shaped screw bolt bending equipment also comprises a support cavity, the support cavity penetrates through the movable mold seat and the **female mold**, and an ejector rod is arranged in the support cavity and is connected with a nitrogen spring device. The U-shaped screw bolt bending equipment has the beneficial effects that the production efficiency is high, the cost is low, and a nitrogen spring is adopted so that a certain pressure is maintained in the bending forming process, a U-shaped screw bolt goes up along with a movable mold during demolding, the forming precision is ensured, in addition, the bending process is stabilized, and the product consistency is good.

Classifications:
International (IPC 8-9): B21D37/10 B21D7/00 (Advanced/Invention)



Family:

Publication number	Publication date	Application number	Application date
■ CN104043697 A	20140917	CN201310083171	20130315
■ CN104043697 B	20160316	CN201310083171	20130315

Priority:

CN201310083171 20130315

Probable Assignee: GUANGDONG FUWA ENG MFG CO LTD

Assignee(s): (std): GUANGDONG FUWA ENG MFG CO LTD

Assignee(s): GUANGDONG FUWA ENGINEERING MFG CO ; GUANGDONG FUWA ENGINEERING MFG CO LTD

Inventor(s): (std): HOU CHUNSHENG ; LI BIAO ; WU ZHIQIANG

Title: Method and apparatus for bending glass sheets

Abstract: The invention is directed to the press bending of individual heated glass sheets to be subsequently laminated in pairs to a plastic interlayer. The sheets are individually press bent between a female ring-type shaping rail and a continuous **male mold** surface having complementary shaping surfaces. In order to provide different pressure patterns for bending the two sheets of each pair, the **male mold** member comprises outer shaping rails supported in spaced relation upon a base plate. A separate flexible shaping member or pad is disposed in the space between the outer shaping rails to define the continuous shaping surface and is mounted in spaced relation upon a support plate. The support plate is affixed to the base plate by means of eccentrically mounted rotatable shafts. Articulating means is provided for cycling the shafts between alternate rotary positions to vary the position of the flexible pad member relative to the outer shaping rails and thereby to apply a different pressure pattern for bending each of the sheets of a pair.

Classifications:

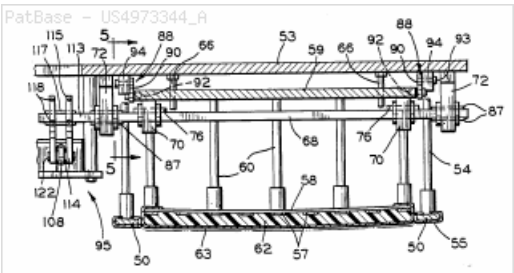
International (IPC 8-9): C03B23/03 (Advanced/Invention); C03B23/02 (Core/Invention)

International (IPC 1-7): C03B23/02

CPC: C03B23/03 C03B2225/02

European: C03B23/03 M03B225/02

US: 65/106 65/288 65/290 65/351



Family:

Publication number	Publication date	Application number	Application date
US4973344 A	19901127	US19890413854	19890928

Priority:

US19890413854 19890928

Probable Assignee: LIBBEY OWENS FORD CO
Assignee(s): (std): LIBBEY OWENS FORD CO
Inventor(s): (std): HAGEDORN FLOYD T ; RAHRIG DONALD D

Title: APPARATUS FOR RESHAPING AND COOLING GLASS SHEETS

Abstract: (Claim 1) 1. Apparatus for heat treating glass sheets, including a **bending mold** comprising a pair of 125 spaced mold parts having complemental shaping surfaces, means for moving at least one of said mold parts towards and away from 1,164,740 the other mold part to press a heat softened glass sheet between the shaping surfaces thereof to bend said sheet to the desired curvature and to then return said mold parts to said spaced relationship, and means for cooling at least one surface of the glass sheet after bending and while said sheet is still in contact with the shaping surface of said one mold part; characterised in that said cooling means comprises at least one tubular member disposed adjacent said sheet surface and mounted for rotation about its longitudinal axis; and means for supplying pressurised gas to said member, said member having orifices formed therein for directing streams of cooling gas against said surface and arranged so that pressurised gas supplied to said member and emitting from said orifices causes said tube to rotate about said axis.

Classifications:

International (IPC 8-9): C03B23/03 C03B27/044 (Advanced/Invention); C03B23/02 C03B27/00 (Core/Invention)

International (IPC 1-7): C03B23/02 C03B23/03 C03B27/04

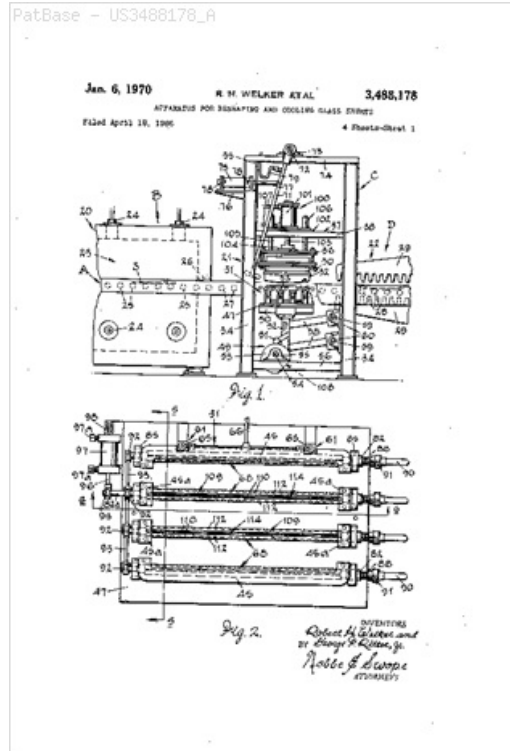
CPC: C03B23/0302 C03B27/0404 C03B27/0417 C03B27/0442

C03B2225/02

European: C03B23/03B C03B27/044B C03B27/04A C03B27/04C

M03B225/02

US: 65/104 65/106 65/114 65/268 65/351



Family:

Publication number	Publication date	Application number	Application date
BE697109 A	19671017		19670417
DE1596508 A1	19710304	DE19671596508	19670418
ES339382 A1	19680501	ES19670339382	19670415
FR1519293 A	19680329	FR19670103039	19670417
GB1164740 A	19690917	GB19670016660	19670412
LU53435 A	19681127		19670417
NL6705212 A	19671019	NL19670005212	19670413
US3488178 A	19700106	US19660543193	19660418

Priority:

US19660543193 19660418 FR19670103039 19670417

Probable Assignee: LOF GLASS INC

Assignee(s): (std): LIBBEY OWENS FORD CO ; LIBBEY OWENS FORD GLASS CO

Assignee(s): LIBBEY OWENS FORD GLASS COMPANY ; LOF GLASS INC ; LIBBEY OWENS FORD COMPANY

Inventor(s): (std): FREDERICK RITTER JUN GEORGE ; HENRY WELKER ROBERT ; RITTER GEORGE F JR ; WELKER ROBERT H

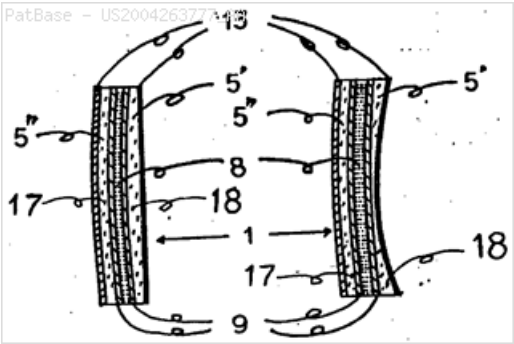
Inventor(s): FREDERICK RITTER JUN ; ROBERT H WELKER ; GEORGE F RITTER JR

Title: PHOTOCROMIC LIGHT-POLARIZING LENS FOR SUNGLASS AND METHOD FOR PRODUCING THE SAME

Abstract: The present invention relates to a photo-chromic light-polarizing lens, in which the defects respectively of conventional polarizing lenses and photo-chromic lenses are remedied to a great extent by mutual supplement and correction, and also the method for its production. By blocking such interfering lights as are caused by reflection or refraction, against which conventional sunglasses or conventional photo-chromic lenses of prior arts are entirely helpless, the lens of the present invention enables people to see things with comfortable clarity in such dark places as a tunnel or insufficiently lighted room. The present invention also provides a powered sunglass lens for weak-sighted people so that sunglasses with power will be made available to them for reasonably cheap prices through mass production.

Classifications:

International (IPC 8-9): B29D11/00 G02B1/04 G02C7/10 G02C7/12 (Advanced/Invention); B29K25/00 B29K27/06 B29K29/00 G02C7/12 (Advanced/Non-invention); B29D11/00 G02B1/04 G02C7/00 (Core/Invention)
International (IPC 1-7): B29D11/00 G02B1/04 G02C7/10 G02C7/12
CPC: G02C7/102 G02C2202/16 G02C7/12
European: G02C7/10 G02C7/12
US: 351/159.27 351/159.270P 351/159.6 351/159.600S 351/163



Family:

Publication number	Publication date	Application number	Application date
CN1578925 A	20050209	CN20028021518	20020830
EP1435015 A1	20040707	EP20020760872	20020830
EP1435015 A4	20050302	EP20020760872	20020830
JP2005500925 T2	20050113	JP20030524077T	20020830
KR100399250 B1	20030926	KR20010053071	20010830
KR20030019767 A	20030307	KR20010053071	20010830
US2004263777 AA	20041230	US20040488286	20040818
WO03019270 A1	20030306	WO2002KR01647	20020830

Priority:

KR20010053071 20010830 WO2002KR01647 20020830

Probable Assignee: SU JIN KIM

Assignee(s): (std): KIM SU JIN ; SU JIN KIM

Inventor(s): (std): KIM SU JIN ; SU JIN KIM

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KP KZ LC LI LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NE NL NO NZ OM PH PL PT RO RU SD SE SG SI SK SL SN SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VN YU ZA ZM ZW

Abstract: The utility model discloses an adjustable U-shaped dual-round corner square pipe **bending mold**. The mold comprises an upper mold and a lower mold, wherein the upper mold comprises a transition mold handle and a **male mold**; and the lower mold comprises a **female mold** and a lower mold base. The mold is characterized in that: the **male mold** consists of a left module and a right module, which are horizontally arranged at an interval; bottoms of the left module and the right module have round corners; two opposite faces of the left module and the right module are in the shape of steps and are provided with longitudinally inverted T-shaped grooves; a front width adjusting T-shaped clamping block and a back width adjusting T-shaped clamping block are arranged in each longitudinally inverted T-shaped groove; a transverse T-shaped groove is also formed in the middle of the transition mold handle; a left T-shaped block and a right T-shaped block are arranged in the transverse T-shaped groove, can slide in the transverse T-shaped groove and are respectively fixedly connected with the left module and the right module; and the left module and the right module are connected into a whole through a locking screw. The problem that the traditional V-shaped square pipe **bending mold** can only process a square pipe with fixed wall thickness is solved by the mold; the problems of poor process performances, relatively high cost, low rigidity and the like are solved by the mold; adjustment can be performed according to different wall thicknesses of square pipes; and the production efficiency is greatly improved.

International (IPC 8-9): B21D37/10 B21D5/10 (Advanced/Invention)



Priority:

Probable Assignee: HUBEI TRI RING METALFORMING EQUIPMENT CO LTD

Assignee(s): (std): HUBEI TRI RING METALFORMING EQUIPMENT CO LTD

Assignee(s): HUBEI TRI RING METALFORMING EQUIPMENT CO

Inventor(s): (std): GUORONG HE ; MING LONG ; SHUNSHENG WU

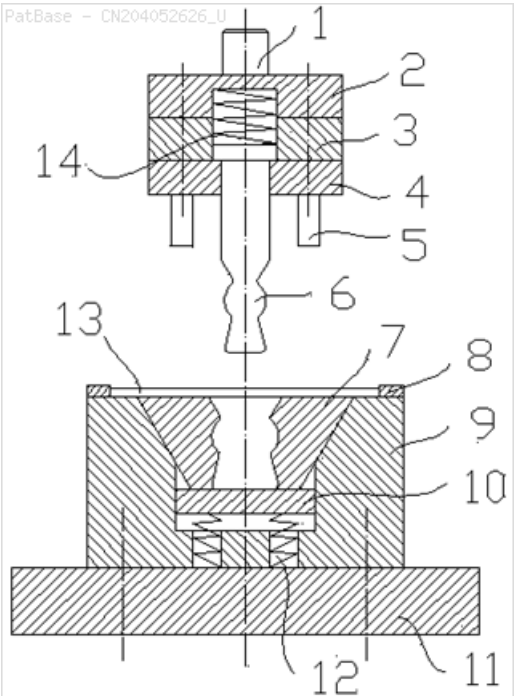
Inventor(s): WU SHUNSHENG ; HE GUORONG ; LONG MING

Title: BENT LEAF SPRING **BENDING MOLD**

Abstract: The utility model discloses a bent leaf spring **bending mold**. The **bending mold** comprises an upper mold holder, a **male mold** and a lower mold holder, wherein the **male mold** is connected to the middle of the lower surface of the upper mold holder and can move up and down, the left side and the right side of the lower portion of the lower mold holder are each fixedly connected with a pressing rod, a slider base is fixedly connected to the upper surface of the lower mold holder, a groove is formed in the upper surface of the slider base, the upper side of the left side face and the upper side of the right side face of the longitudinal cross section of the groove are inclined to the center of the groove from top to bottom, a left slider and a right slider are arranged in the groove and attached to the upper side of the left side face and the upper side of the right side face of the groove through inclined faces, the two opposite side faces of the left slider and the right slider form a **female mold** hole, a first spring is arranged between the left slider and the right slider, the lower surface of the left slider and the lower surface of the right slider are each provided with a cushion block, a second spring is arranged on the lower surface of each cushion block, and the left side and the right side of the upper surface of the slider base are each provided with a positioning structure. Workpieces can be formed just through one mold, the production cost is saved, the machining man hours are saved, and the workpieces are not prone to springback.

Classifications:

International (IPC 8-9): B21D37/10 B21D5/00 (Advanced/Invention)



Family:

Publication number	Publication date	Application number	Application date
 CN204052626 U	20141231	CN201420510601U	20140905

Priority:

CN201420510601U 20140905

Probable Assignee: HAO HAI

Assignee(s): (std): HAO HAI

Inventor(s): INVENTOR HAS WAIVED RIGHT TO BE MENTIONED

Title: APPARATUS FOR SPRAY COOLING GLASS SHEETS

Abstract: (Claim 1) 1. Apparatus for heat treating glass sheets, including a **bending mold** comprising a pair of spaced mold parts having comple1,169,432 3. Apparatus as claimed in Claim 2, characterised in that said aspirating means comprises a tapered hood having inclined side walls to define a passageway terminating in a slot adjacent said sheet, said streams of cooling gas being directed through said passageway to flow from said slot and to aspirate gas from the ambient atmosphere into and through said passageway and against said sheet surface.

Classifications:

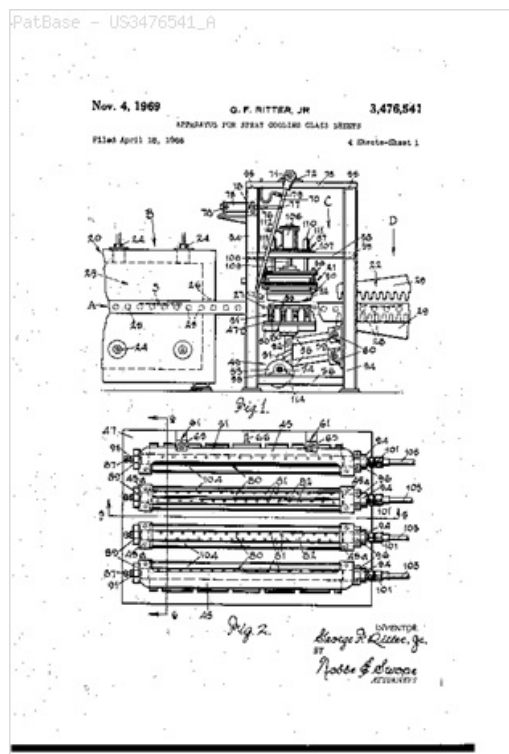
International (IPC 8-9): C03B23/03 C03B27/044 (Advanced/Invention); C03B23/02 C03B27/00 (Core/Invention)

International (IPC 1-7): C03B23/02 C03B23/03 C03B23/06 C03B27/00 C03B27/04

CPC: C03B23/0302 C03B27/0404 C03B27/0417 C03B27/0442 C03B2225/02 C03B23/03

European: C03B23/03 C03B23/03B C03B27/044B C03B27/04A C03B27/04C M03B225/02

US: 65/104 65/114 65/119 65/268 65/287 65/351



Family:

Publication number	Publication date	Application number	Application date
BE697110 A	19671017		19670417
DE1596507 A1	19710318	DE19671596507	19670417
ES339380 A1	19680501	ES19670339380	19670415
FR1519291 A	19680329	FR19670103037	19670417
GB1169432 A	19691105	GB19670016272	19670410
JP49028020 B4	19740723	JP19670024448	19670418
LU53426 A	19681127		19670417
NL6705418 A	19671019	NL19670005418	19670418
US3476541 A	19691104	US19660543096	19660418

Priority:

US19660543096 19660418 FR19670103037 19670417

Probable Assignee: LOF GLASS INC

Assignee(s): (std): LIBBEY OWENS FORD CO ; LIBBEY OWENS FORD GLASS CO

Assignee(s): LIBBEY OWENS FORD GLASS COMPANY ; LOF GLASS INC ; LIBBEY OWENS FORD COMPANY

Inventor(s): (std): FREDERICK RITTER GEORGE ; RITTER GEORGE F JR

Inventor(s): GEORGE F RITTER JR

Title: IMPACT BEND MOULD WITH SLIP TERRACE DIE

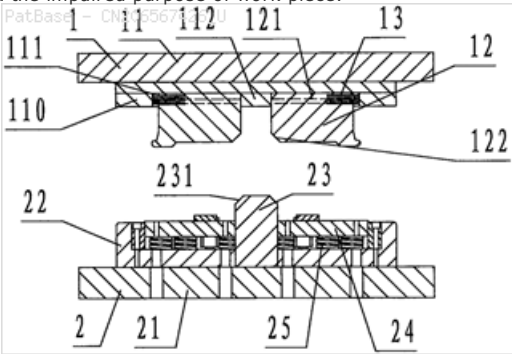
Abstract: The utility model provides an impact bend mould with slip terrace die, including last mould (1) and lower mould (2). The utility model discloses a last mould be equipped with mould support plate, slip terrace die and reset spring, go up the mould support plate and be equipped with frame slot, slide rail and dog below, the higher authority of slip terrace die is equipped with the spout, the slip terrace die entad lower part of side is equipped with and pushes away the inclined plane, the lower mould is equipped with lower mould support plate, die, voussoir, scraping wings and push pedal spring, and the higher authority of voussoir is equipped with the wedge and pushes away the face, the during operation struts the slip terrace die through the voussoir centrifugation and makes the A work piece buckle the shaping for the B work piece, entad draw the slip terrace die in through reset spring and send the technical scheme that the B work piece can the automatic drawing of patterns, make in the processing of impact bend mould bent face department be equipped with the panel beating work piece of protruding structure, reached and lighten working strength, improve production efficiency, avoid the impaired purpose of work piece.

Classifications:

International (IPC 8-9): B21D11/00 B21D37/10

B21D45/04 (Advanced/Invention)

CPC: B21D37/10 B21D11/00 B21D45/04



Family:

Publication number	Publication date	Application number	Application date
■ CN106944544 A	20170714	CN201710180601	20170317
■ CN206567426 U	20171020	CN201720291313U	20170317

Priority:

CN201710180601 20170317 CN201720291313U 20170317

Probable Assignee: NINGBO SHUANGLIN AUTOMOBILE PARTS CO LTD

Assignee(s): (std): NINGBO SHUANGLIN AUTOMOBILE PARTS CO LTD

Assignee(s): LIN AUTO PARTS CO LTD NINGBO DOUBLE ; NINGBO SHUANGLIN AUTOMOBILE PARTS CO

Inventor(s): (std): QIN YONGXIN ; YANG GUILIN ; YOU BAIYI

Title: GLASS SHEET SUPPORTING PRESS BENDING AND CONVEYING APPARATUS

Abstract: 1,241,118. Bending and conveying glass sheets. LIBBEY-OWENS-FORD CO. 16 May, 1969 [24 May, 1968], No. 25063/69. Heading C1M. Apparatus for bending glass sheet, e.g. to form vehicle windscreens, comprising an upper, stationary mould member 11 and a movable, lower mould member 12, e.g. of the ring type, in which a glass sheet is bent by raising the lower mould member by means of the ram 29 and guide members 28 so that a heat-softened glass sheet resting on conveyer rolls 17 against the stop 36 is raised and bent partially by sagging under its own weight and partially under the influence of the upper mould member, is characterized by having conveyer rolls 17 constructed with an outer sleeve 39 with a cover 46 (asbestos or fibre glass) which fits loosely over the driving shaft 38 in which it is in single line contact only so that, when a glass sheet abuts against the stop 36, slippage occurs between the roll and the driving shaft, thus reducing the distorting forces as exerted on the glass sheet.

Classifications:

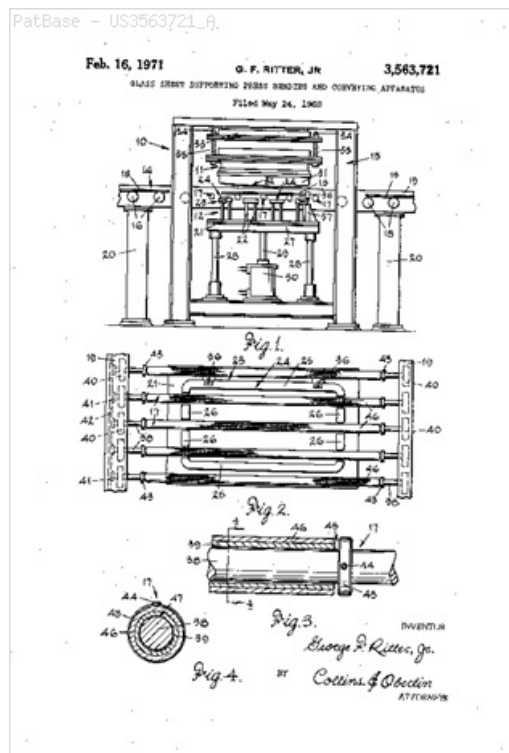
International (IPC 8-9): C03B23/03 C03B35/18 (Advanced/Invention); C03B23/02 C03B35/00 (Core/Invention)

International (IPC 1-7): B65G39/02 C03B23/02 C03B23/03 C03B35/00 C03B35/18 C03C23/00

CPC: C03B23/03 C03B35/181 C03B2225/02

European: C03B23/03 C03B35/18 C03B35/18A M03B225/02

US: 65/273 65/275 65/289



Family:

Publication number	Publication date	Application number	Application date
BE733451 A	19691103		19690522
DE1926090 A1	19691204	DE19691926090	19690521
ES367594 A1	19710416	ES19690367594	19690523
FR2009278 A1	19700130	FR19690016984	19690523
GB1241118 A	19710728	GB19690025063	19690516
IE33412 B	19740626	IE19690000678	19690516
IE33412 L	19691124	IE19690000678	19690516
LU58701 A	19690829		19690522
NL6907888 A	19691126	NL19690007888	19690522
US3563721 A	19710216	US19680731998	19680524

Priority:

US19680731998 19680524

Probable Assignee: LOF GLASS INC

Assignee(s): (std): LIBBEY OWENS FORD CO ; LIBBEY OWENS FORD GLASS CO

Assignee(s): LOF GLASS INC ; LIBBEY OWENS FORD COMPANY ; LIBBEY OWENS FORD GLASS

Inventor(s): (std): FREDERICK RITTER JUN GEORGE ; RITTER GEORGE F JR

Inventor(s): FREDERICK RITTER JUN ; GEORGE F RITTER JR

Title: **BENDING MOLD** AND METHOD OF PROLONGING THE LIFE THEREOF

Abstract: (Claim 1) .1. A,plaster of Paris bending molcl,:a Plural,itY of layers .-of. glass cloth secured to the bending. face of the mold, and a coating of a highly heat resistiig plastic material on said glass cloth.

Classifications:

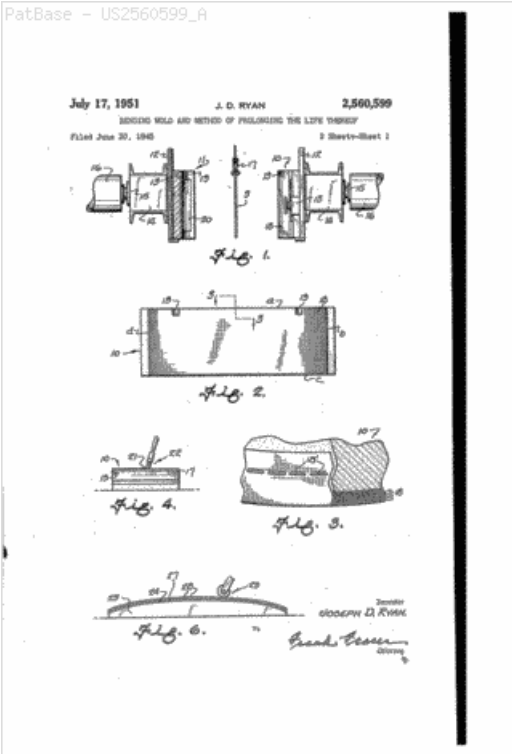
International (ipc 8-9): C03B23/031 (Advanced/Invention);
C03B23/02 (Core/Invention)

International (ipc 1-7): C03B23/03

CPC: Y10S52/07 C03B23/031

European: C03B23/031

US: 249/114.1 425/175 52/DIG.7 65/287 65/374.1



Family:

Publication number	Publication date	Application number	Application date
US2560599 A	19510717	US19450602587	19450630

Priority:

US19450602587 19450630

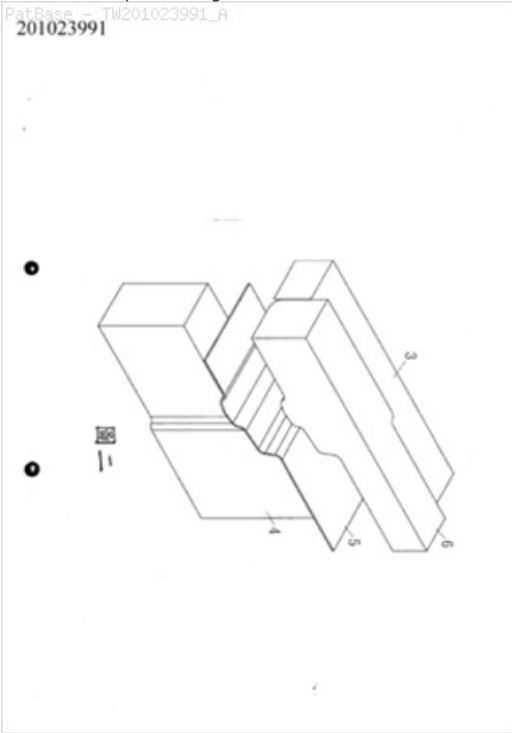
Probable Assignee: LIBBEY OWENS FORD GLASS CO
Assignee(s): (std): LIBBEY OWENS FORD GLASS CO
Assignee(s): LIBBEY OWENS FORD GLASS COMPANY
Inventor(s): (std): RYAN JOSEPH D

Title: Bending method of non-cut multilevel metal sheet

Abstract: The present invention relates to a bending method of non-cut multilevel metal sheet. It mainly uses a male mold and female mold and a bending mold to stamp and bend a formed lacquer-baking multilevel metal sheet. As the male mold and bending mold stamp and bend the lacquer-baking multilevel metal sheet, the bend portion after processing can be a flat surface and it is not required to cut at the bend portion in advance with the result of convenient processing.

Classifications:

International (IPC 8-9): B21D11/02 B21D22/04 (Advanced/Invention);
B21D11/02 B21D22/04 (Core/Non-invention)



Family:

Publication number	Publication date	Application number	Application date
TW201023991 A	20100701	TW20080150808	20081226

Priority:

TW20080150808 20081226

Probable Assignee:

DOMAIN IND CO LTD I

Assignee(s): (std):

DOMAIN IND CO LTD I

Assignee(s):

I DOMAIN INDUSTRIAL CO

Inventor(s): (std):

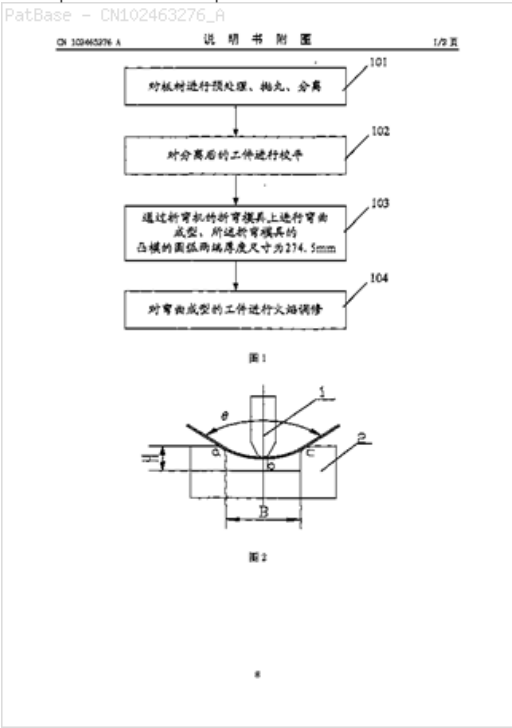
XU JIN ZHONG

Title: MANUFACTURING METHOD OF A BENT PART AND BENDING MACHINE

Abstract: The invention provides a manufacturing method of a bent part and a bending machine, wherein the manufacturing method of the bent part comprises the following steps of: performing pretreatment, shot-blasting and separation on a plate; leveling a workpiece after separation; and performing bending forming through a bending mold of the bending machine, wherein the bending mold comprises a female mold and a male mold, and the top end of the male mold is in the shape of a circular arc. According to the manufacturing method of the bent part and the bending machine, provided by the invention, the perfect linkage of leveling through a 11-roll leveling machine, mold repair, profiling and other process steps is realized, so that the problem of low quality of the bent part produced by the existing method is solved, the planeness of the plate is improved, the applicability of the mold is improved and the bending forming quality of the bent part is further improved.

Classifications:

International (IPC 8-9): B21D1/02 B21D21/00
B21D5/06 (Advanced/Invention)



Family:

Publication number	Publication date	Application number	Application date
CN102463276 A	20120523	CN201010546413	20101115

Priority:

CN201010546413 20101115

Probable Assignee: DATONG ELECTRIC LOCOMOTIVE CO

Assignee(s): (std): DATONG ELECTRIC LOCOMOTIVE CO

Inventor(s): (std): SHOULI CUI ; XINGXUE YANG ; CHAO GAO ; BING XU ; YUANYUAN HUANG

Inventor(s): YANG XINGXUE ; GAO CHAO ; HUANG YUANYUAN ; XU BING ; CUI SHOULI

Title: An improved method of and apparatus for simultaneously forming male and female molds for use in the shaping of glass sheets

Abstract: [Class 56] Glass sheets are bent between opposed complementary concave and convex members of plaster of Paris, or of gypsum plaster, which members are made by positioning a pair of pattern moulds, in a mould box, in correctly spaced relationship, depositing a plaster composition between the moulds to form a master mould, drying the master mould and removing the patterns to produce cavities in the mould box which are filled with a plaster composition which, after drying, forms the bending members. In Fig. 2, the plaster members 14, 15 have shoulders 34, 35 on their vertical edges by which the angle plates 32, 33 secure them to flat metal backing members 27, carried by transverse beams 18, 19 actuated by the rams 20. The members 14, 15 have recesses 46... 49 to accommodate the tongs 11, which carry the glass sheet 10, as described in Specification 633,330, and the members are positioned relatively to the backing members 27 by resting at the bottom on a ledge secured to each member 27, and by a key 44 which engages recesses in the members 14, 15 and in the members 27. The mould box, Figs. 3, 4, in which the master mould 88 is made and in which, subsequently, the members 14, 15 are moulded, comprises sides 54, 55 hinged at 56 to bracket plates 57, e.g. three for each side, which are adjustable along a corresponding number of strips 60 secured by screws to the top 53 of the carriage 50, to vary the spacing of the sides. The bottom of the mould is closed by a wood or plaster block 74, and accurate surfaces are formed on the lower edges of the members 14, 15 to rest upon the locating ledges on the members 27, by metal strips 75, 76 which serve also to eject the plaster members 14, 15 from the mould when the sides 54, 55 are swung down. The sides are maintained in the correct vertical positions by bolts and nuts 66, 72. The end walls 77, 78 of the mould box, preferably of plaster, are clamped between the sides 54, 55 and are prevented from moving outwardly by a fixed vertical plate 79 and an angle plate 80 respectively, the plate 80 being adjustable along a slot 83 provided with a clamping bolt 82. The master mould 88 is formed, at its vertical edges, with V-shaped grooves 91, 92 which receive protuberances 93, 94 on the end walls whereby the master mould is located correctly. The master mould is recessed to hold blocks 99, 100 which form the tongs receiving recesses 46... 49 in the members 14, 15. A funnel 87 deposits plaster on both sides of the master mould. The rear faces and edges of the members 14, 15 may be coated with shellac to minimise the loss of moisture from the members during use, and a thin rubber sheet may be arranged between each of the members 14, 15 and the members 27.

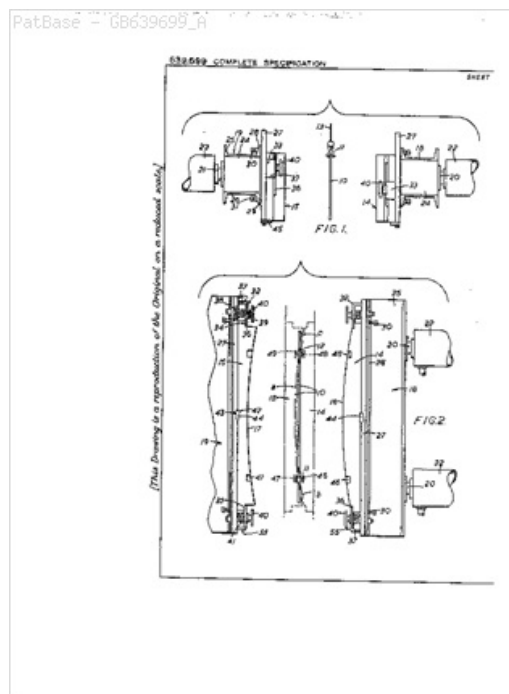
Classifications:

International (IPC 8-9): B28B7/34 (Advanced/Invention);

B28B7/34 (Core/Invention)

CPC: B28B7/346

European: B28B7/34D



Family:

Publication number	Publication date	Application number	Application date
GB639699 A	19500705	GB19480006286	19480228

Probable Assignee: LIBBEY OWENS FORD GLASS CO
Assignee(s): (std): LIBBEY OWENS FORD GLASS CO
Assignee(s): LIBBEY OWENS FORD GLASS COMPANY

Title: APPARATUS FOR USE IN THE SHAPING OF GLASS SHEETS OR PLATES

Abstract: 1. In an apparatus for shaping glass sheets, shaping molds of 'a plaster composition having cornplmental convex and concave bending faces adapted to engage opposite surfaces of the sheet and to shape said sheet therebetween to the desired cu.rvs|.ture, said shaping molds being provided with shoulders at the opposite ends thereof, supporting means for each shaping mold comprising a vertical attaching plate, clamping means carried by each plate and engaging the shoulders on the respective mold :lor removably clamping said mold upon said attaching plate, and means carried by the attaching plates for lining up the molds both horizon~ tally and vertically.

Classifications:

International (IPC 8-9): C03B23/031 (Advanced/Invention);

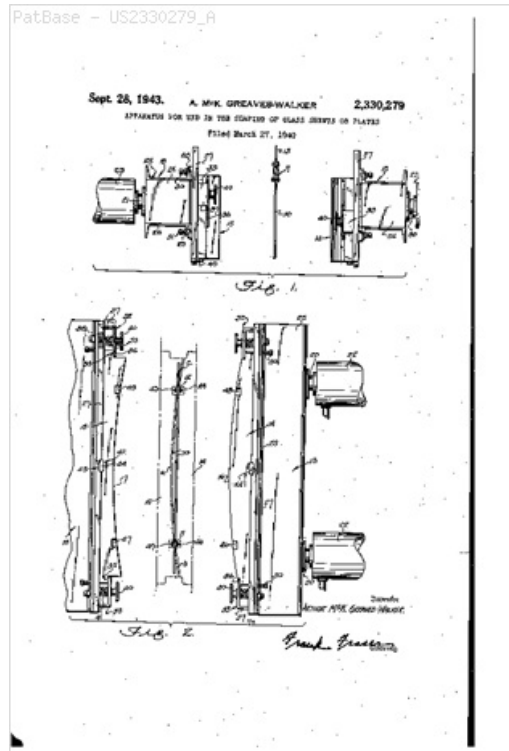
C03B23/02 (Core/Invention)

International (IPC 1-7): C03B23/03

CPC: C03B23/031 Y10S425/029

European: C03B23/031

US: 264/227 425/DIG.29 65/287 65/305 65/323



Family:

Publication number	Publication date	Application number	Application date
CA613040 A	19610124		00000000
US2302764 A	19421124	US19410389610	19410421
US2330279 A	19430928	US19400326228	19400327

Priority:

US19400326228 19400327 US19410389610 19410421

Probable Assignee: ADELAIDE M GREAVES WALKER

Assignee(s): (std): LIBBEY OWENS FORD GLASS CO ; ADELAIDE M GREAVES WALKER

Assignee(s): JOSEPH D RYAN ; LIBBEY OWENS FORD GLASS COMPANY ; THE LIBBEY OWENS FORD GLASS COMPANY ; WILLIAM P BAMFORD

Inventor(s): (std): BAMFORD WILLIAM P ; MCK GREAVES WALKER ARTHUR ; RYAN JOSEPH D

Inventor(s): WILLIAM P BAMFORD ; GREAVES WALKER ARTHUR MCK ; JOSEPH D RYAN

Title: APPARATUS FOR SPRAY COOLING GLASS SHEETS

Abstract: 1,157,566. Bending glass sheets. LIBBEYOWENS-FORD GLASS CO. 11 April, 1967 [18 April, 1966], No. 16413/67. Heading C1M. In a glass bending machine having upper and lower moulds, the lower being of skeleton or ring construction, and in which a stream of cooling air is directed on to the bottom surface of the glass prior to removing it from the lower mould (see Specification 1,052,473 Division C1), a construction for blowing air on to the bottom surface is disclosed. Parallel tubes 80 extend transversely of the sheet and underneath the lower mould 45a and each consist of concentric tubes 80, 97 the former having holes 81 at intervals and the latter having a perforate portion 90. The indirect path thus formed for the air gives a uniform cooling effect and thus improves the optical quality of the sheet. To promote a greater air-flow, instead of air inlet pipe 85 being sealed to tube 80, it may form an injector therewith and thus draw in ambient air to augment the cooling air. An electrical sequential automatic control circuit for the machine is disclosed.

Classifications:

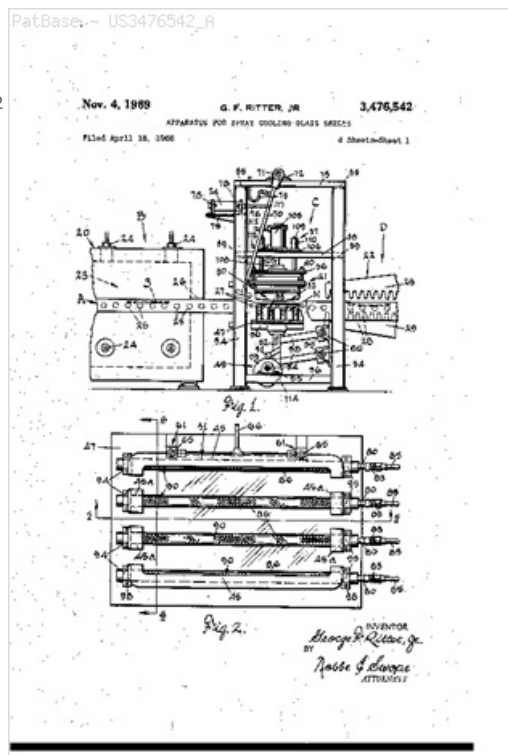
International (IPC 8-9): C03B23/03 C03B27/044 (Advanced/Invention); C03B23/02 C03B27/00 (Core/Invention)

International (IPC 1-7): C03B23/03 C03B23/06 C03B27/00 C03B27/04

CPC: C03B23/03 C03B23/0302 C03B27/0404 C03B27/0417 C03B27/0442 C03B2225/02

European: C03B23/03 C03B23/03B C03B27/044B C03B27/04A C03B27/04C M03B2225/02

US: 65/104 65/114 65/119 65/268 65/287 65/351

**Family:**

Publication number	Publication date	Application number	Application date
BE697174 A	19671018		19670418
DE1596509 A1	19710304	DE19671596509	19670418
ES339381 A1	19680501	ES19670339381	19670415
FR1519292 A	19680329	FR19670103038	19670417
GB1157566 A	19690709	GB19670016413	19670411
LU53425 A	19681127		19670417
NL6705419 A	19671019	NL19670005419	19670418
US3476542 A	19691104	US19660543117	19660418

Priority:

US19660543117 19660418 FR19670103038 19670417

Probable Assignee: LOF GLASS INC

Assignee(s): (std): LIBBEY OWENS FORD CO ; LIBBEY OWENS FORD GLASS CO

Assignee(s): LIBBEY OWENS FORD GLASS COMPANY ; LOF GLASS INC

Inventor(s): (std): FREDERICK RITTER JUN GEORGE ; RITTER GEORGE F JR

Inventor(s): FREDERICK RITTER JUN ; GEORGE F RITTER JR

Title: GLASS SHEET SUPPORTING AND CONVEYING APPARATUS WITH MEANS TO CHANGE THE CONTOUR OF THE CONVEYOR

Abstract: 1,149,337. Roller conveyers. LIBBEYOWENS-FORD GLASS CO. 21 March, 1968 [24 March, 1967], No. 13681/68. Heading B8A. [Also in Divisions C1 and F2] Apparatus 10 for bending glass sheets 26 includes conveyer rolls 13 which are adjustable, to conform to the plane or curved contour of a sheet, by varying a tensile force applied to the rolls. Each roll comprises tubular stub shafts 30, 31 and a centre section consisting of a coil spring 32 that is secured at its ends to the stub shafts. The shafts are driven by chain and sprockets 36, 37. Through the centre of the roll passes a cable 40 secured at one end to the stub shaft 31, the other cable end being connected to a double-acting cylinder 41 controlling tension applied to the cable. For maintaining the cable concentric with the coil spring 32, cylindrical members 42 are secured to the cable. The surface of the roll is of woven asbestos or fibre glass cloth 38. The apparatus 10 also includes a substantially stationary upper mould member 11 and a movable lower mould member 12 of ring-type outline comprising transverse segments 17 and longitudinal segments 18. An air-operated ram 24, 25 raises and lowers the mould 12. When a heat-softened flat glass sheet is fed from the left in Fig. 1, the roll cables 40 will be under tension. The sheet, in passing on to the rolls 13 causes a photo-electric device 81, 82 to initiate a sequence in which the mould 12 is raised for a timed interval, the tension on the rolls 13 is relaxed to adjust the rolls to receive the now bent sheet and two stops 28 are lowered to permit the sheet to be discharged. The stops are then raised again and the rolls retensioned. An electrical circuit for controlling the pressure system of the apparatus is described with reference to Fig. 6 (not shown).

Classifications:

International (IPC 8-9): B65G39/02 C03B23/03

C03B35/18 (Advanced/Invention);

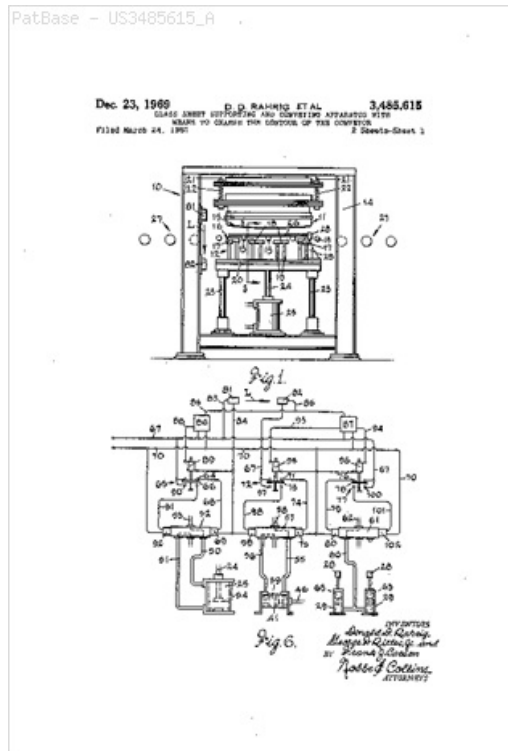
B65G39/00 C03B23/02 C03B35/00 (Core/Invention)

International (IPC 1-7): B65G13/00 B65G39/06 C03B13/18 C03B23/03 C03B35/00 C03B35/18

CPC: C03B23/03 C03B35/187 C03B2225/02

European: C03B23/03 C03B35/18 C03B35/18F M03B225/02

US: 198/780 65/181 65/273 65/275 65/289 65/370.1



Family:

Publication number	Publication date	Application number	Application date
BE712462 A	19680920		19680320
DE1756042 A1	19700527	DE19681756042	19680325
ES351903 A1	19690701	ES19680351903	19680322
FR1557439 A	19690214		19680322
GB1149337 A	19690423	GB19680013681	19680321
IE31824 B	19730110	IE19680000311	19680319
IE31824 L	19680924	IE19680000311	19680319
JP49016249 B4	19740420	JP19680019351	19680325
LU55740 A	19680801		19680322
NL6804144 A	19680925	NL19680004144	19680322
US3485615 A	19691223	US19670625872	19670324

Priority:

US19670625872 19670324

Probable Assignee: LOF GLASS INC

Assignee(s): (std): LIBBEY OWENS FORD GLASS CO

Assignee(s): LIBBEY OWENS FORD GLASS COMPANY ; LOF GLASS INC

Inventor(s): (std): RITTER GEORGE F JR ; RAHRIG DONALD D ; CARSON FRANK J ; JACOB CARSON FRANK ; FREDERICK RITTER JUN GEORGE ; DALE RAHRIG DONALD

Inventor(s): DONALD D RAHRIG ; FRANK J CARSON ; FREDERICK RITTER JUN ; GEORGE F RITTER JR

Title: CONTROLLING THE SHAPE OF A SHEET OF GLASS DURING COOLING

Abstract: Removing heated glass sheets outside a furnace introduces a temperature gradient along the length of the glass. This gradient induces thermal warpage when the glass transfers from a shaping station to a cooling station. The present invention compensates for this warpage by supporting the glass sheet in spaced relation between opposed outline guides having complementary shapes conforming to that desired for the glass sheet marginal portion during the cooling step that heat-strengthens the shaped glass. Care is taken to avoid

Classifications:

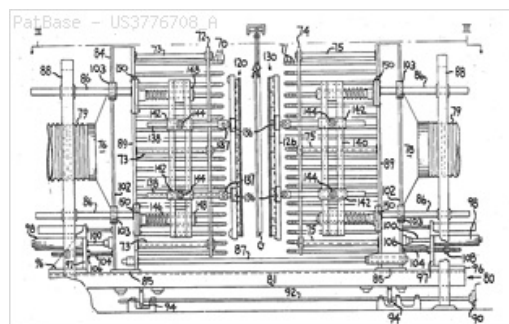
International (IPC 8-9): C03B23/031 C03B27/052 (Advanced/Invention);
C03B23/02 C03B27/00 (Core/Invention)

International (IPC 1-7): C03B23/02 C03B23/03 C03B27/00 C03B27/04

CPC: C03B23/031 C03B27/052

European: C03B23/031 C03B27/052

US: 65/114 65/348

**Family:**

Publication number	Publication date	Application number	Application date
AU197239094 A1	19730823	AU19720039094	19720217
AU461610 B2	19750529	AU19720039094	19720217
BE785243 A	19721222	BE19720785243	19720622
BR7202575 A0	19730927	BR19720002575	19720427
CA964064 A1	19750311	CA19720135814	19720229
DE2230401 A1	19721228	DE19722230401	19720622
DE2230401 B2	19801120	DE19722230401	19720622
DE2230401 C3	19811203	DE19722230401	19720622
FR2142935 A1	19730202	FR19720017611	19720517
FR2142935 B1	19800314	FR19720017611	19720517
GB1357498 A	19740619	GB19720029205	19720622
IT952912 A	19730730	IT19720067698	19720306
JP53028926 B4	19780817	JP19720034558	19720407
US3776708 A	19731204	US19710155873	19710623

Priority:

US19710155873 19710623

Probable Assignee: PPG INDUSTRIES INC

Assignee(s): (std): PPG INDUSTRIES INC ; PPG IND INC

Assignee(s): PPG IND INC PITTSBURGH PA V ST A ; PPG IND INC US ; PPG INDUSTRIES INC 15222 PITTSBURGH PA US ; PPG INDUSTRIES INC ONE GATEWAY CENTER PITTSBURGH PENNSYLVANIA E U A ; PPG INDUSTRIES INC PITTSBURGH PA V ST A ; SEYMOUR SAMUEL L

Inventor(s): (std): SEYMOUR S ; SEYMOUR SAMUEL L ; SEYMOUR SAMUEL LANSING ; SEYMOUR S L

Inventor(s): SEYMOUR SAMUEL LANSING OAKMONT PA ; SEYMOUR SAMUEL LANSING OAKMONT PA US ; SEYMOUR SAMUEL LANSING OAKMONT PA V ST A ; SL SEYMOUR ; SEYMOUR S US ; S L SEYMOUR ; SAMUEL LANSING SEYMOUR

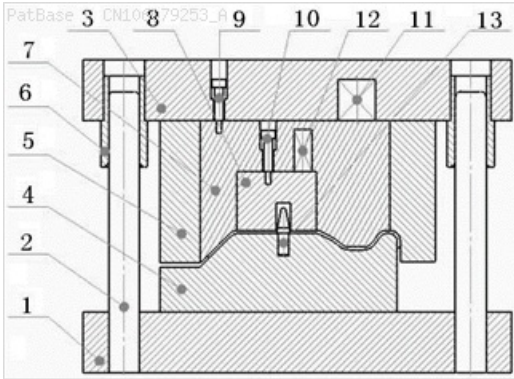
Title: MOLD MECHANISM FOR ONE-TIME MOLDING OF LOWER BOARD OF FRONT AUXILIARY FRAME OF SUV

Abstract: The invention provides a mold mechanism for one-time molding of a lower board of a front auxiliary frame of an SUV. The mold mechanism comprises a lower mold base 1 which is provided with guide columns; an upper mold base is arranged above the lower mold base; a **male mold** is arranged at the upper end of the lower mold base; a **female mold** is arranged at the lower end of the upper mold base; guide sleeves are arranged on the upper mold base and are matched with the guide columns to work; a pressing core is arranged beside the **male mold**; a loose core is arranged beside the pressing core; and an equal-height bolt for the pressing core is arranged on the upper mold base. One procedure and a **bending mold** can be saved during production; and the advantages of improving the working efficiency and product quality, reducing the production cost, and the like are achieved.

Classifications:

International (IPC 8-9): B21D37/08 B21D43/00 B21D53/88
B29C45/26 (Advanced/Invention)

CPC: B29C45/26 B21D37/08 B21D43/003 B21D53/88



Family:

Publication number	Publication date	Application number	Application date
■ CN106079253 A	20161109	CN201610381586	20160602

Priority:

CN201610381586 20160602

Probable Assignee: ANHUI LANHUA METAL SCIENCE AND TECH CO LTD

Assignee(s): (std): ANHUI LANHUA METAL SCIENCE AND TECH CO LTD

Assignee(s): ANHUI LANHUA METAL SCIENCE AND TECHNOLOGY CO ; BLUE METAL TECHNOLOGY CO LTD IN ANHUI CHINA

Inventor(s): (std): LIU YING ; XU JIAPING

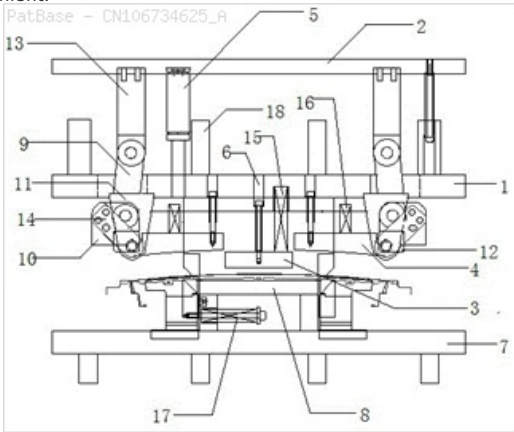
Title: BENDING AND ANGLE WRAPPING MOLD FOR END HEADS OF REFRIGERATOR DOOR SHELL

Abstract: The invention provides a bending and angle wrapping mold for end heads of a refrigerator door shell. The bending and angle wrapping mold comprises an upper mold, a lower mold and a bending and angle wrapping mechanism which is located between the upper mold and the lower mold, wherein the upper mold comprises an upper mold seat, an upper support plate, a material prepressing plate, a material pressing plate and a telescopic piece; the lower mold comprises a lower mold seat and a bending **male mold**; the bending **male mold** is horizontally mounted at the middle part of the lower mold seat; and the bending and angle wrapping mechanism comprises connecting rods, bending **female molds**, bending **female mold** connecting seats and angle wrapping blocks. According to the bending and angle wrapping mold disclosed by the invention, a conventional **bending mold** and a conventional angle wrapping mold are combined, so that the defects of folding, paint peeling, film peeling, unevenness and the like generated at the bending and angle wrapping positions of the refrigerator door shell can be effectively avoided; the machining accuracy is high; and the usage is safe and convenient.

Classifications:

International (IPC 8-9): B21D37/10 B21D5/02 (Advanced/Invention)

CPC: B21D37/10 B21D5/0209



Family:

Publication number	Publication date	Application number	Application date
 CN106734625 A	20170531	CN201611267666	20161231

Priority:

CN201611267666 20161231

Probable Assignee: CHUZHOU AIDE MOULDING EQUIPMENT CO LTD

Assignee(s): (std): CHUZHOU AIDE MOULDING EQUIPMENT CO LTD

Assignee(s): ED MOULD LTD CHUZHOU ; CHUZHOU AIDE MOULDING EQUIPMENT CO

Inventor(s): (std): ANG CHAO

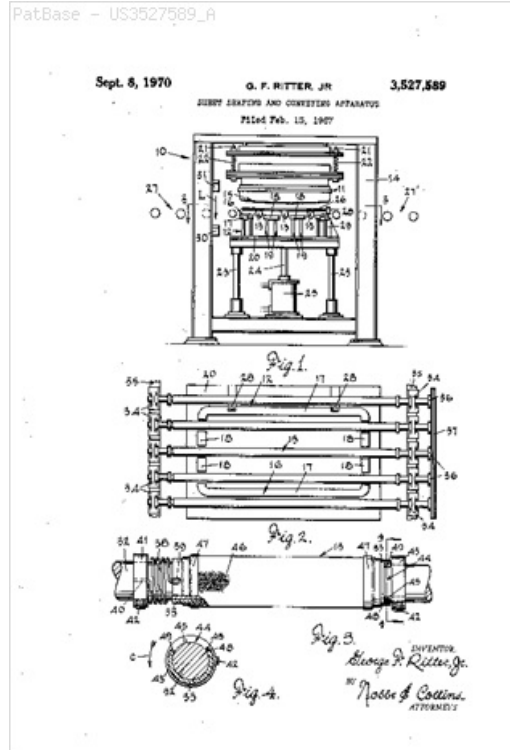
Title: SHEET SHAPING AND CONVEYING APPARATUS**Abstract:** (Claim 1) 1. A conveyor roll, characterized in that said roll comprises a driven shaft, a load supporting sleeve rotatable on said shaft, and means coupling said shaft and sleeve together for simultaneous rotary movement while permitting a limited amount of relative rotary movement therebetween.**Classifications:****International (IPC 8-9):** B65G39/00 C03B23/03

C03B35/18 (Advanced/Invention);

B65G39/00 C03B23/02 C03B35/00 (Core/Invention)

International (IPC 1-7): B65G13/073 B65G39/07 C03B23/02 C03B23/03

C03B35/00 C03B35/18 C23B

CPC: B65G13/073 B65G39/07 C03B23/03 C03B35/181 C03B35/186 C03B2225/02**European:** B65G13/073 B65G39/00 B65G39/07 C03B23/03 C03B35/18 C03B35/18A C03B35/18E M03B225/02**US:** 198/614 198/780 65/273 65/275 65/289 65/317**Family:**

Publication number	Publication date	Application number	Application date
BE710499 A	19680808		19680208
DE1556613 A1	19700305	DE19681556613	19680212
ES350304 A1	19690501	ES19680350304	19680208
FR1553526 A	19690110		19680213
GB1182208 A	19700225	GB19680005614	19680205
IE31887 B	19730207	IE19680000128	19680201
IE31887 L	19680813	IE19680000128	19680201
LU55455 A	19680423		19680212
NL6801701 A	19680814	NL19680001701	19680207
US3527589 A	19700908	US19670615803	19670213

Priority:

US19670615803 19670213

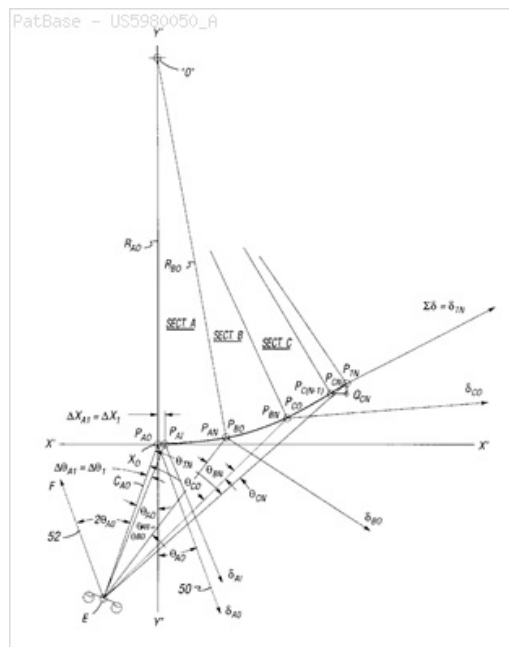
Probable Assignee: LOF GLASS INC**Assignee(s):** (std): LIBBEY OWENS FORD CO ; LIBBEY OWENS FORD GLASS CO**Assignee(s):** LIBBEY OWENS FORD GLASS COMPANY ; LOF GLASS INC ; LIBBEY OWENS FORD COMPANY**Inventor(s):** (std): FREDERICK RITTER JUN GEORGE ; RITTER GEORGE F JR**Inventor(s):** FREDERICK RITTER JUN ; GEORGE F RITTER JR

Abstract: PCT No. PCT/US95/15561 Sec. 371 Date Jun. 2, 1997 Sec. 102(e) Date Jun. 2, 1997 PCT Filed Nov. 30, 1995 PCT Pub. No. WO96/16839 PCT Pub. Date Jun. 6, 1996A vehicle mirror, and a mold for making same, each includes a portion of the viewing surface wherein the field angle increases at an increasing rate as the observer's eye travels outward across the mirror, and another portion wherein the field angle increases at a decreasing rate as the observer's eye travels across the mirror surface. In one embodiment, the mirror includes a primary viewing area (16) nearest to the observer (14) having a spherical convex surface, a secondary viewing area (18) somewhat farther from the observer, having an aspherical convex surface wherein the field angle increases at an increasing rate, and a tertiary viewing area (20) still farther outward, having an aspherical convex curvature wherein the field angle increases at a decreasing rate.

International (IPC 8-9): B60R1/08 (Advanced/Invention);
B60R1/08 (Core/Invention)

CPC: B60R1/082

US: 359/868



Publication number	Publication date	Application number	Application date
AU199642904 A1	19960619	AU19960042904	19951130
US5980050 A	19991109	US19970849260	19970602
WO9616839 A1	19960606	WO1995US15561	19951130

US19940347891 19941201 WO1995US15561 19951130 US19970849260 19970602

Assignee(s): (std): MCCORD ROBERT C ; MULTIVEX MIRROR CO ; MULTIVEX MIRROR COMPANY

Inventor(s): (std): MCCORD ROBERT C

Inventor(s): ROBERT C MCCORD

Designated states: AL AM AT AU BB BE BF BG BJ BR BY CA CF CG CH CI CM CN CZ DE DK EE ES FI FR GA GB GE GN GR HU IE
IS IT JP KE KG KP KR KZ LK LR LS LT LU LV MC MD MG MK ML MN MR MW MX NE NL NO NZ PL PT RO RU SD
SE SG SI SK SN TG TZ TJ TM TT UA UG US UZ VN

Title: METHOD AND APPARATUS FOR BENDING GLASS SHEETS OR PLATES

Abstract: (Claim 1) 1. A method of bending glass sheets, which comprises heating a sheet to be bent and bending the under surface thereof into conformity with a skeleton type convex shaping surface in the absence of pressure applied to the central sheet portion, inverting the bent sheet and supporting it on a skeleton type concave shaping surface, and then shaping the sheet to finished curvature on - Said concave shaping surface.

Classifications:

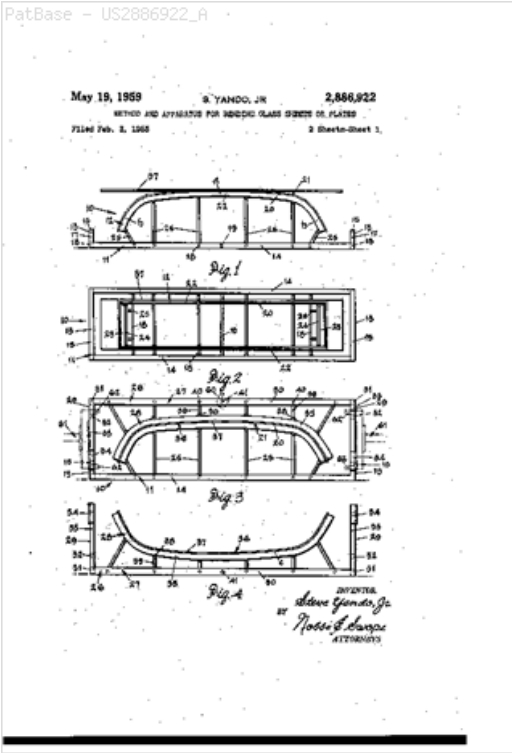
International (IPC 8-9): C03B23/03 (Advanced/Invention);
C03B23/02 (Core/Invention)

International (IPC 1-7): C03B23/03

CPC: C03B23/0302

European: C03B23/03 C03B23/03B

US: 65/107 65/273 65/285



Family:

Publication number	Publication date	Application number	Application date
ES226474 A1	19560401	ES19560226474	19560202
US2886922 A	19590519	US19550485923	19550203

Priority:

US19550485923 19550203

Probable Assignee: LIBBEY OWENS FORD GLASS CO
Assignee(s): (std): LIBBEY OWENS FORD GLASS CO
Assignee(s): LIBBEY OWENS FORD GLASS COMPANY
Inventor(s): (std): YANDO JR STEVE
Inventor(s): JR STEVE YANDO