March 29, 1966 A. L. WING 3,243,179

ROUTER TEMPLATE AND HOLDING MEANS THEREFOR

Filed Jan. 27, 1964 2 Sheets-Sheet 1

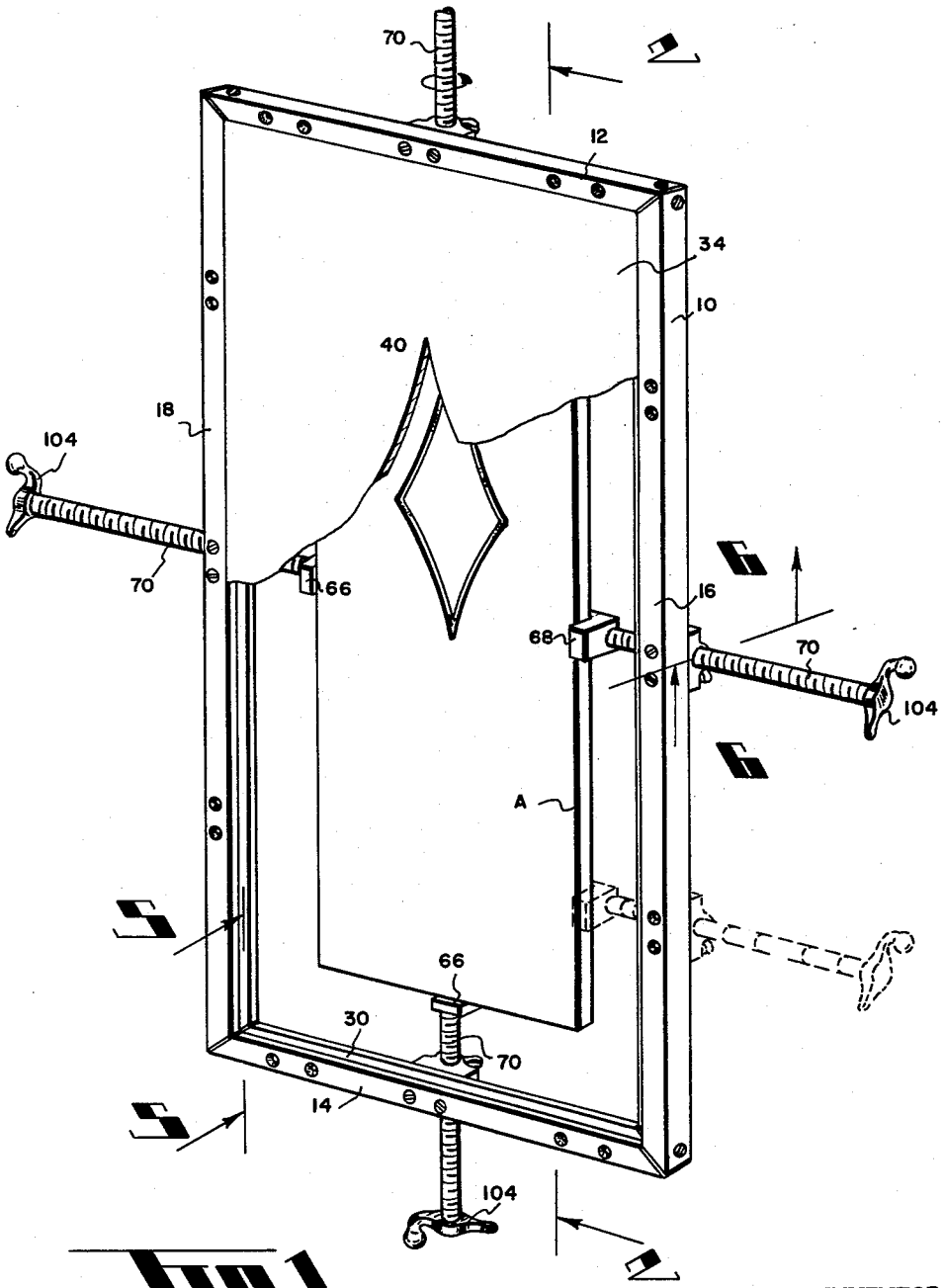


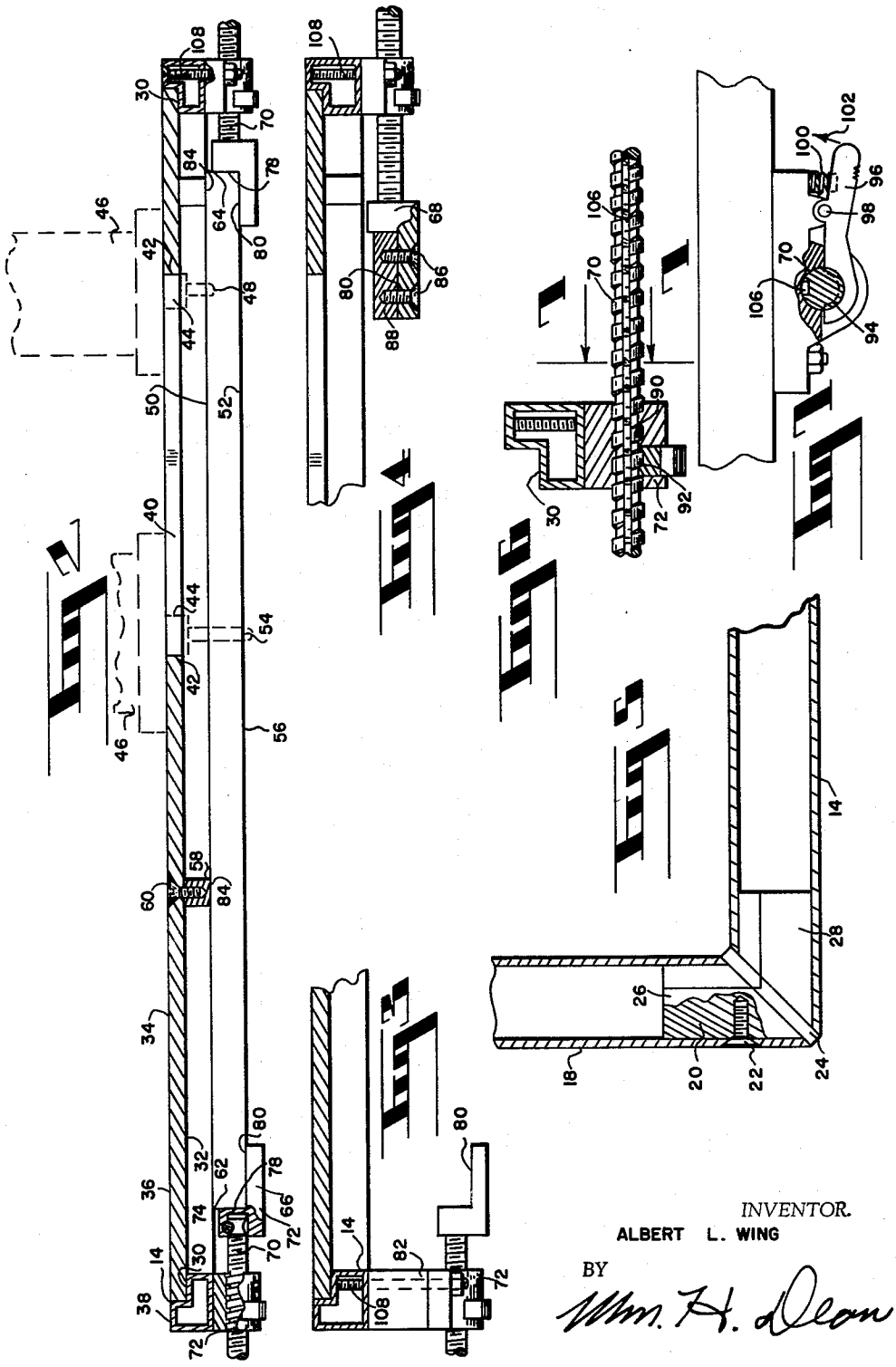

Fig 1

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3,243,179

# ROUTER TEMPLATE AND HOLDING MEANS THEREFOR

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This invention relates to a router template and holding means therefor, and, more particularly, to a routing template and holding means for use in routing various designed configurations in flat panels or doors, or for routing holes therethrough for the insertion of windows or the like.

In custom cabinet work it has been a problem to provide a versatile and simple routing template and holding means therefor wherein a great variety of templates may readily be removably supported in connection with the holding means for guiding a router to form recessed designs in flat panels or for routing openings in various doors such as kitchen cabinet doors or full height walk-through doors, as desired.

It has heretofore been a problem to provide a versatile routing template and holding means therefor which may readily be attached to various doors in various areas thereof, and to also accommodate doors of varying thickness for the purpose of routing a great variety of ornamental designs in the faces of such doors or panels, or to rout openings therein to provide for the installation of windows.

Accordingly, it is an object of the present invention to provide a very versatile routing template and holding means therefor in which a frame is provided with opposed clamping means disposed to engage opposite edges of doors or panels for holding them in fixed relation to the template holding means so that a router may follow an opening in the template to cut a design in a panel or door or to rout an opening therethrough in conforming relation with the opening in the template.

Another object of the invention is to provide a novel template and holding means therefor wherein templates having various router guide designs may readily be connected to or removed from the holding means, and whereby a very versatile adjustable clamping means may permit a door or panel to be held in relation to the routing template in such a manner that the opening in the template may be located at various positions on the door or the panel as desired.

Another object of the invention is to provide a routing template and holding means therefor wherein the template holding means is provided with opposed portions having L-shaped clamping structures provided with ledges facing a template held by the holding means to hold one side of a door or a panel in juxtaposition with respect to a template removably held in the holding means.

Another object of the invention is to provide a routing template and holding means therefor in which the holding means is provided with opposed L-shaped clamps disposed to engage opposite edges of a door or panel and to engage one side thereof, said L-shaped clamps provided with spacers disposed to engage one side of a door or a panel to thereby compensate for the thickness thereof so that one side of the panel or door may be held in fixed spaced relationship at a predetermined plane with respect to the routing template.

Another object of the invention is to provide a routing template and holding means therefor wherein a template holding frame mounts a plurality of opposed clamping means having substantially L-shaped members engageable with one side of a panel and with opposite edges thereof, and wherein spacing means is provided between the frame and the mounting of the clamping means to provide for



the accommodation of relatively thick doors between the clamping means and a predetermined plane spaced from the routing template.

Another object of the invention is to provide a novel routing template and holding means wherein the holding means is provided with spaced frame portions and clamping means on the spaced frame portions are opposed to each other and engageable with opposite edges of a door or panel, and wherein adjustable screw means is provided in relation to the frame for adjusting and holding the clamping means securely in engagement with opposite sides or edges of a door or panel for holding it in juxtaposition with relation to a template in the holding means of the invention.

Another object of the invention is to provide a routing template and holding means therefor wherein a pair of opposed clamping elements are engaged with the frame of the holding means of the invention and are opposed to each other and actuated by helical screws engaged by a disengageable nut segment and wherein the screws are slidably positioned in bearings so that the screws may initially be freely reciprocated longitudinally of their axes in the bearings and thus roughly adjusted to engage opposite edges of a door or panel whereupon subsequent engagement of a nut segment with the screws may be attained to provide screw threaded engagement of the screws relative to the frame holding means in order to provide for final tightening of the clamping means against opposite edges of a door or panel.

Another object of the invention is to provide a routing template and holding means therefor comprising a template supporting frame having a removable template connected therewith and having opposed screw actuated clamping means adapted to engage opposite edges of a door or panel; flat portions on said screw disposed to present measuring indicia thereon provided to facilitate centering or locating of the panel or door between the clamping means with respect to the template holding means.

Another object of the invention is to provide a routing template and holding means therefor wherein the holding means comprises a frame having spaced elements and wherein clamping means is mounted on the spaced elements in opposed relation to each other to engage and clamp opposite edges of a door or panel on a fixed plane, and wherein spacers secured to the removable template of the invention outwardly of a router guide opening bear upon the panel or door held by the clamping means to support the template and prevent deflection thereof when a router is supported on the template and guided during the routing of design in the door or panel or during the routing of an opening therethrough, as desired.

Further objects and advantages of the invention may be apparent from the following specification, appended claims and accompanying drawings in which:

FIGURE 1 is a perspective view of a routing template and holding means therefor showing portions of a routing template broken away to amplify the illustration and further showing a door or panel having a design routed therein and held by the clamping means of the holding means, and additionally illustrating by broken lines varying positions of the clamping means with respect to the template holding frame means of the invention;

FIGURE 2 is a sectional view taken from the line 2—2 of FIGURE 1 showing by broken lines various positions of a router for either routing designs in a panel held between clamping means of the template holding means, or for routing openings in the panel; FIGURE 2 further showing portions of the structure of the invention broken away and in section to amplify the illustration;

FIGURE 3 is a fragmentary sectional view similar to the left hand portion of FIGURE 2, but showing a spacer

block between the router template holding frame of the invention and a screw clamp bearing in order to accommoderate doors or panels of relatively thick dimensions when held adjacent the routing template of the invention;

FIGURE 4 is a fragmentary sectional view similar to the right hand end of FIGURE 2, but showing spacer blocks on L-shaped clamping devices of the invention, said spaced blocks being adapted to provide for supporting a relatively thin panel or door adjacent to the routing template of the invention;

FIGURE 5 is an enlarged fragmentary sectional view taken from the line 5—5 of FIGURE 1 showing the router template holding frame structure of the invention, and particularly means at the corners of the frame for holding it in precise assembly;

FIGURE 6 is an enlarged fragmentary sectional view taken from the line 6—6 of FIGURE 1 showing a clamping screw structure of the invention and a disengageable screw threaded nut structure which permits simple rough adjustment of opposed door or panel clamps for engagement of opposite edges of such doors or panels and subsequent tightening of the clamping means to hold the door or panel in fixed position relative to the routing template of the invention; and

FIGURE 7 is a sectional view taken from the line 7—7 of FIGURE 6 and further illustrating the structure shown in FIGURE 6.

As shown in FIGURES 1 and 2 of the drawings, the routing template and holding means therefor comprises a frame **10** which may be substantially rectangular; this frame is provided with a pair of end members **12** and **14**, which are opposed to each other, and a pair of side members **16** and **18**, which are opposed to each other. These frame members **12**, **14**, **16** and **18** are connected together at their corners by L-shaped blocks, as shown in FIGURE 5 of the drawings. These L-shaped blocks **20** are fitted into the hollow tubular structure of the frame members **12**, **14**, **16** and **18**, the cross section of which is shown in FIGURE 2 of the drawings. Screws **22** extend through a side wall of each of the frame members **12**, **14**, **16** and **18**, and into one of the blocks **20** in order to securely fix the frame members to the respective blocks **20**.

Each block **20** is provided with a rib portion **24** which is disposed at substantially 45 degrees to the legs **26** and **28** thereof, which are disposed at right angles to each other. This rib **24** extends outward to the full external dimenisons of the cross section of each frame member **12**, **14**, **16** or **18** and forms a 45 degree abutment engaged by each respective end of each respective frame member, all as shown best in FIGURE 5 of the drawings.

In cross section all of these frame members **12**, **14**, **16** and **18** are similar, and therefore the cross section of the frame member **14**, as shown in FIGURE 2, will be hereindescribed.

The cross section of this frame member is substantially L-shaped, although it is hollow and thus the frame member **14** is provided with a recessed step **30** forming a ledge upon which a lower surface **32** of a routing template **34** rests. Thus an upper surface **36** of the routing template **34** is flush with an upper surface **38** of the cross section of the frame member **14**, and likewise the upper surface **36** of the template **34**; it is thus maintained flush with the remaining upper surfaces of all of the frame members **12**, **14**, **16** and **18**. The template **34** is readily removably mounted in the ledge structures **30**, and thus the template **34** may be replaced as desired in order to select various router designed guide openings, such as the opening **40** disclosed in FIGURES 1 and 2 of the drawings. This opening **40** may be of any shape, and therefore it is desirable that a great number of templates may be provided for each holding frame, as hereinbefore described, so that a cabinet worker or someone routing designs or openings in panels or doors may select a great variety of designs and merely replace the template **34** according to the design opening required. This design opening **40**, shown in FIGURE 2 of the drawings, is provided with an inner outline edge **42**, which may be followed by a spindle guide **44** of a router **46**, and the router **46** may be provided with a spindle **48** extending only a short distance inwardly of the upper surface **50** of a panel **52** for routing a design in the surface of the panel, or the router **46** may be provided with a long cutter **54** which may extend all the way through the panel from its upper surface **50** to its lower surface **56**; thus a window may be routed in the panel in accordance with the shape of the template opening **40**.



The panel A shown in FIGURES 1 and 2 of the drawings is engaged at its upper surface **50** by spacers **58** secured by screws **60** to the template **34** so that the spacers **58** support the template **34** on the upper surface **50** of the door or panel in order to prevent downward deflection of the template **34** when the router **46** is supported thereon and routing design recesses in the surface **50** of a door or panel, or when the long cutter **54** is used to rout a window opening therethrough.

Opposite edge portions **62** and **64** are engaged by opposed L-shaped clamping means **66** and **68** each of which is connected to an adjusting screw **70**, said adjusting screw being rotatable in a bearing portion **72** of the L-shaped clamping means **66**, while a cross pin **74** maintains the enlarged head **76** of each screw captive so that the screw is rotatable relative to the L-shaped clamping means **66** and **68** to permit rotatable adjustment and tightening of the screws **70** relative to each of the L-shaped clamping means **66** and **68**, as will be hereinafter described.

It will be seen that the clamping means **66** and **68** are opposed and that there are two pairs of them, shown in FIGURE 1 of the drawings, and that the clamping screw **70** holding these L-shaped clamping means **66** and **68** are all similar structures.

Each L-shaped clamping means **66** is provided with a surface **78** disposed to engage an edge of a door or a panel and is also provided with a ledge or face **80** disposed to engage a door or panel at the opposite side thereof from the side **50** adjacent to the template **34**. Thus, the ledges **80** hold a door or panel in juxtaposition with relation to the spaces **58** and the template **34** and in position to be routed by either of the routing cutters **48** or **54**, as desired.

Each screw **70** is supported in a bearing **72**, which may be internally screw threaded, or which may be a smooth bore structure with a disengageable nut, as will be hereinafter described. These bearings **72** may be connected directly with the frame elements **12**, **14**, **16** and **18**, as shown in FIGURE 2 of the drawings, or spacers **82** may be interposed between the bearings **72** and the frame members to provide a substantially great spacing of each clamp ledge **80** relative to end portions **84** of the spacers **58**. Thus the structure shown in FIGURE 3 of the drawings provides for the holding of a relatively thick door or panel by reason of the mounting of the bearings **72** on the spacers **82** which are interposed between the frame elements and the clamping means bearings **72**.

As shown in FIGURE 4 of the drawings, screws **86** secure a spacing block **88** to the face **80** of an L-shaped clamping means **66** or **68** so that the spacer **88** reduces the distance between the ends **84** of the spacers **58** and the clamping means to provide for holding a very thin door or panel to be routed adjacent the template **34**.

The screws **70** are provided with square abutment thread portions **90** engageable by conforming threads **92** of a nut portion **94** integral with a lever **96** pivoted on a pin **98** and held normally in engagement with each screw **70** by means of a spring **100**. Depression of the lever **96** in the direction of an arrow **102** causes the nut portion **94** to disengage from the square threads of the screw **70** and to permit the screw **70** to be slidably moved through its respective bearing **72** in order to make rough adjustments of the screws longitudinally of their axis to project the clamping means **66** and **68** into engagement with opposite edges **62** and **64** of a door or panel A, where-

upon engagement of the nut portion **94** of the lever **96** with the abutment threads of the screws **70** permit the screws then to be rotated by their respective crank handles **104** to tighten them securely against opposite edges of the door or the panel so as to hold it firmly and securely in position adjacent the template **34** in juxtaposition for the routing operation hereinbefore described.

A narrow flat surface **106** disposed longitudinally of each screw **70** is provided with measurement calibrations which may be read adjacent to each bearing **72** so that dimensional facilities are provided for sliding the screws **70** longitudinally of their axes either to center the door or panel A between the frame members of the template holding means or to precisely locate the opening **40** of the template in a required position relative to the door or panel A for the desired routing operation.

It will be seen that the bearings **72** are securely held to the frame members by screws **108**, and these screws **108** may be relatively long as shown in FIGURE 3, or may be simply long enough to bolt the bearings directly to the frame members, as shown in FIGURES 2 and 4 of the drawings.

It will be obvious to those skilled in the art that various modifications of the invention may be resorted to in a manner limited only by a just interpretation of the following claims.

I claim:

**1.** In a routing template and holding means therefor the combination of: a frame having spaced template holding portions; a template removably supported by said holding portions; said template having an opening therein for guiding a router spindle; opposed clamping means carried by said holding portions and adapted to clamp against opposite edges of a panel member to hold it in adjacent relation to said template; L-shaped clamp structure of said clamping means having ledge portions facing said template and adapted to engage one side and opposite edges of a door or panel for holding it adjacent said template; removable spacers on faces of said L-shaped clamp structure for holding relatively thin doors or panels adjacent to said template.

**2.** In a routing template and holding means therefor the combination of: a frame having spaced template holding portions; a template removably supported by said holding portions; said template having an opening therein for guiding a router spindle; opposed clamping means carried by said holding portions and adapted to clamp against opposite edges of a panel member to hold it in adjacent relation to said template; said clamping means comprising screws rotatably connected to said clamping means; and means engaging said screws supported in fixed relation with said holding portions of said frame whereby said screws may be tightened to project and hold said clamping means against opposite edges of a door or panel for retaining the same securely in juxtaposition relative to said template.

**3.** In a routing template and holding means therefor the combination of: a frame having spaced template holding portions; a template removably supported by said holding portions; said template having an opening therein for guiding a router spindle; opposed clamping means carried by said holding portions and adapted to clamp against opposite edges of a panel member to hold it in adjacent relation to said template; said clamping means comprising screws rotatably connected to said clamping means; and means engaging said screws supported in fixed relation with said holding portions of said frame whereby said screws may be tightened to project and to hold said clamping means against opposite edges of a door or panel for retaining the same securely in juxtaposition relative to said template; bearings for said screws secured on said holding portions of said frame to thereby support said clamping means in juxtaposition relative to said frame and said template.

**4.** In a routing template and holding means therefor



the combination of: a frame having spaced template holding portions; a template removably supported by said holding portions; said template having an opening therein for guiding a router spindle; opposed clamping means carried by said holding portions and adapted to clamp against opposite edges of a panel member to hold it in adjacent relation to said template; said clamping means comprising screws rotatably connected to said clamping means; and means engaging said screws supported in fixed relation with said holding portions of said frame whereby said screws may be tightened to project and hold said clamping means against opposite edges of a door or panel for retaining the same securely in juxtaposition relative to said template; bearings for said screws secured on said holding portions of said frame to thereby support said clamping means in juxtaposition relative to said frame and said template; said bearing means having smooth bore portions through which said screws are readily slidably mounted; and spring loaded screw threaded means normally held in engagement with a segment of a respective screw and disengageable with the screw for freely sliding it in the smooth bore portions of the respective bearings; each of said screws having a flat portion longitudinally thereof carrying measurement calibrations for use in locating said clamping means relative to said frame so that a door or panel may precisely be located relative to said frame visually before routing the door or panel in accordance with the operation of the template.

**5.** In a routing template and holding means therefor the combination of: a frame having spaced template holding portions; a template removably supported by said holding portions; said template having an opening therein for guiding a router spindle; opposed clamping means carried by said holding portions and adapted to clamp against opposite edges of a panel member to hold it in adjacent relation to said template; L-shaped clamp structure of said clamping means having ledge portions facing said template and adapted to engage one side and opposite edges of a door or panel for holding it adjacent said template; spacers secured to said template adjacent said opening; said spacers disposed and adapted to engage a panel or door held by said L-shaped clamp structures whereby said spacers support said template on said panel or door and prevent deflection of said template toward said panel or door when a router is placed on said template to rout said panel or door by projection of the router spindle of the router through said opening in said template.

**6.** In a holding means the combination of: a surrounding frame; opposed clamping means carried by said frame and adapted to clamp against opposite edges of a structure surrounded by said frame; said clamping means comprising screws rotatably connected to said clamping means whereby said screws may be tightened to project and hold said clamping means against opposite edges of a structure surrounded by said frame; support means for said screws secured on said frame to thereby support said clamping means in juxtaposition relative to said frame; said support means having portions through which said screws are readily axially slidably mounted; and spring loaded screw-threaded means normally held in engagement with a segment of each of said respective screws and disengageable with each respective screw of the respective support means thereby permitting freely slidable movement of each screw to permit said clamping means to be readily and quickly adjusted to engage said structure preliminary to the tightening of said opposed clamping means thereagainst.

**7.** In a holding means the combination of: a surrounding frame; opposed clamping means carried by said frame and adapted to clamp against opposite edges of a structure surrounded by said frame; said clamping means comprising screws rotatably connected to said clamping means whereby said screws may be tightened to project and hold said clamping means against opposite edges of a structure surrounded by said frame; support means for said screws

secured on said frame to thereby support said clamping means in juxtaposition relative to said frame; said support means having portions through which said screws are readily axially slidably mounted; and spring loaded screw-threaded means normally held in engagement with a segment of each of said respective screws and disengageable with each respective screw of the respective support means thereby permitting freely slidable movement of each screw to permit said clamping means to be readily and quickly adjusted to engage said structure preliminary to the tightening of said opposed clamping means thereagainst; L-shaped clamping structure of said clamping means secured to each of said screws and having ledge portions facing one open side of said surrounding frame and adapted to engage one side and opposite edges of said structure surrounded by said frame.



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