Sept. 22, 1959 D. THOMAS 2,905,210

BENCH SAW ATTACHMENTS FOR MULTIPLE ANGLE CUTTING

Filed Oct. 8, 1958 2 Sheets-Sheet 1

Fig. 1

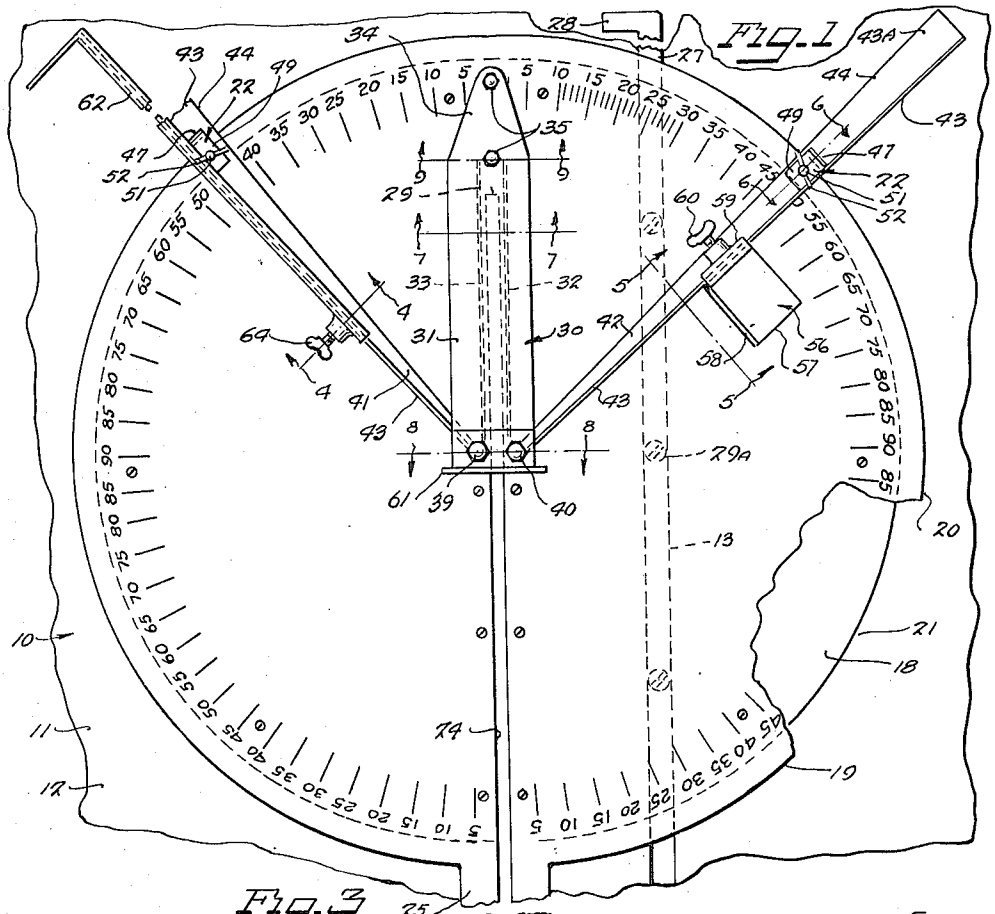


Fig. 3

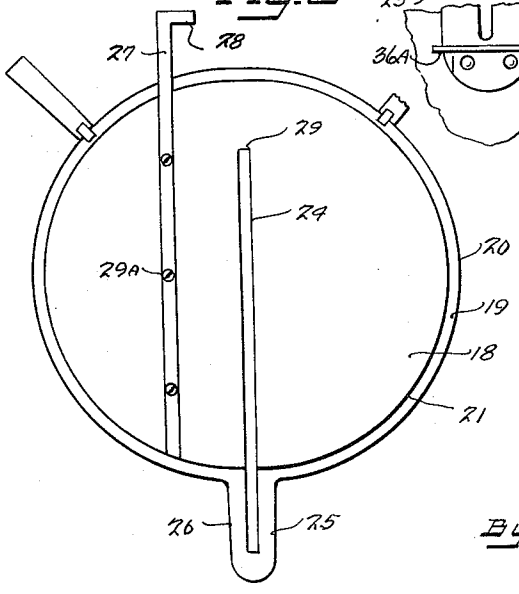


Fig. 4

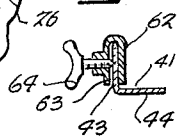


Fig. 5

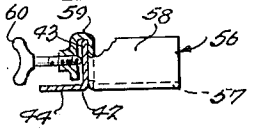
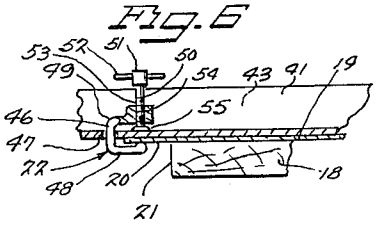


Fig. 6



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Sept. 22, 1959 D. THOMAS 2,905,210

BENCH SAW ATTACHMENTS FOR MULTIPLE ANGLE CUTTING

Filed Oct. 8, 1958 2 Sheets-Sheet 2

Fig 2

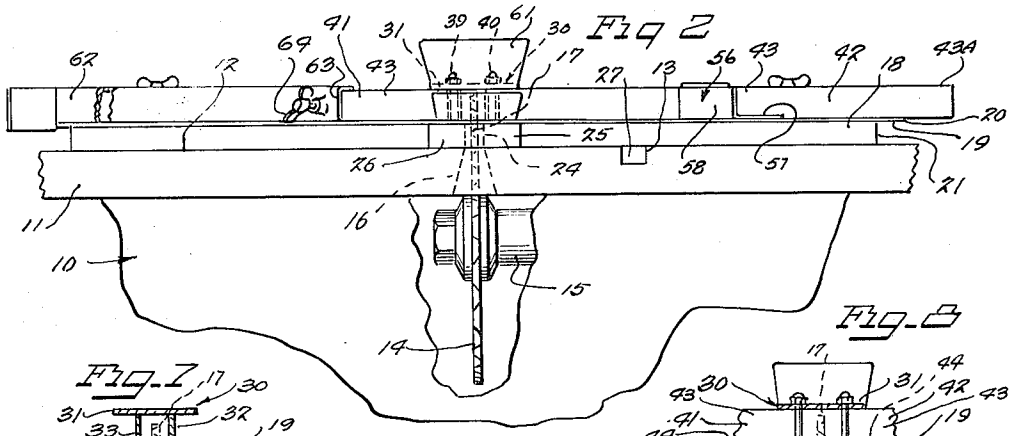


Fig-7

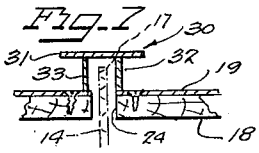


Fig-8

Fig-9

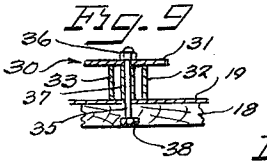


Fig-10

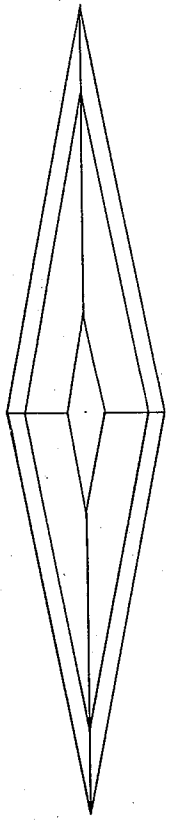


Fig-11

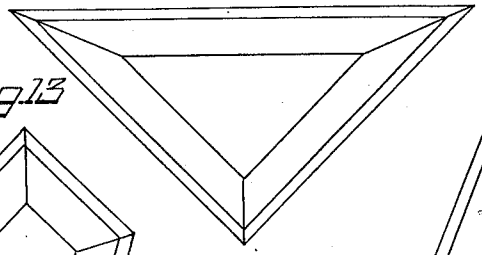


Fig-12

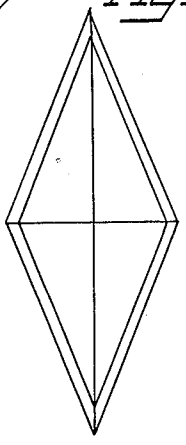


Fig-13

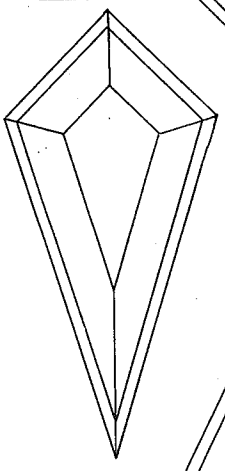
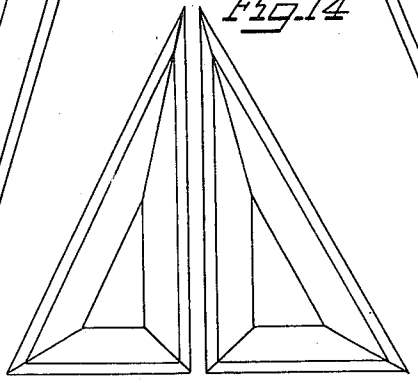


Fig-14



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United States Patent Office 2,905,210 Patented Sept. 22, 1959

2,905,210

BENCH SAW ATTACHMENTS FOR MULTIPLE ANGLE CUTTING

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Application October 8, 1958, Serial No. 766,089

3 Claims. (Cl. 143—169)

The present invention relates to bench saw attachments for multiple angle cutting, and is particularly concerned with attachments which are adapted to be used with any bench saw, having a table provided with a rectangular groove extending parallel to the rotary saw blade.

One of the objects of the invention is the provision of an improved compact and simple attachment for a bench saw by means of which pieces of lumber, such as molding, trim, picture framing, plywood, and other special pieces of lumber may be cut accurately at any angle so that the parts will fit together smoothly to provide a finished job in the making of door ornaments or pieces of inlay or cabinet work.

Another object of the invention is the provision of an improved attachment of the class described which is compact, simple, capable of economical manufacture, and adapted to be used in factory production for making a multiplicity of identical wooden parts with a minimum amount of time and labor.

Another object of the invention is the provision of an improved attachment of the class described which will fit any bench saw by merely adjusting the guide bar to conform to the distance between the guide groove on the saw table and the slot for the saw blade.

Another object of the invention is the provision of an improved attachment which may be used to cut at any degree to a high degree of accuracy, and which has a pair of guides that may be set at different or complementary angles to manufacture wooden parts without changing the setting of the guides.

Another object of the invention is the provision of an attachment of the class described which has a maximum safety for the user, being provided with a guard that covers the saw blade at all times from both sides and the top so that the fingers of the user cannot come close to the saw blade or touch it, and which is provided with handles located on the plate and the guard for convenient manipulation.

Another object of the invention is the provision of an attachment of the class described which is limited in its sliding movement so that the metal parts can never come into contact with the saw blade to damage its teeth or sharpness.

Other objects and advantages of the invention will be apparent from the following description and the accompanying drawings, in which similar characters of reference indicate similar parts throughout the several views.

Referring to the drawings, of which there are two sheets,

Fig. 1 is a top plan view of the attachment embodying my invention;

Fig. 2 is a fragmentary front elevational view;

Fig. 3 (sheet 1) is a bottom plan view;

Fig. 4 is a sectional view on the plane of the line 4—4 of Fig. 1, looking in the direction of the arrows;

Fig. 5 is a fragmentary sectional view taken on the

plane of the line 5—5 of Fig. 1, looking in the direction of the arrows;

Fig. 6 is a fragmentary sectional view taken on the plane of the line 6—6 of Fig. 1, looking in the direction of the arrows;

Fig. 7 is a fragmentary sectional view taken on the plane of the line 7—7 of Fig. 1, looking in the direction of the arrows;

Fig. 8 is a fragmentary sectional view taken on the plane of the line 8—8 of Fig. 1, looking in the direction of the arrows;

Fig. 9 is a fragmentary sectional view taken on the plane of the line 9—9 of Fig. 1, looking in the direction of the arrows;

Figs. 10–14 are plan views of various types of assemblies of ornamental moldings made, using the present attachment.

Referring to Figs. 1 and 2, 10 indicates in its entirety a conventional bench saw which is provided with a metal table 11, having an upper plane surface 12, which is provided with a rectangular groove 13 extending from front to back of the bench saw table 11 parallel to the rotary saw blade 14, which is mounted upon a shaft 15 to rotate in a slot 16 in the bench or table 11 and to have its upper edge 17 projecting above the bench saw table 11.

The present attachment preferably comprises a relatively thick plywood board 18, which is generally circular in shape, and which serves as a support for an aluminum plate 19 serving as a gauge plate for indicating the degrees setting for various cuts.

The diameter of the board 18 is preferably about sixteen to eighteen inches; and that of the gauge plate 19 is preferably larger so that the guage plate may have its outer edge 20 projecting beyond the edge 21 of the board to provide space for the clamping members 22, which are used to secure the guide rails 42 and 43 in any adjusted position.

The gauge plate 19 is fixedly secured to the table board 18 by a plurality of screw bolts having heads and nuts countersunk therein or by wood screws; and both the gauge plate 19 and the table board 18 are provided with a transversely extending saw blade slot 24 of sufficient width to pass any saw blade that is to be used, without contact.

The slots 24 in plate and board register with each other and are wide enough to permit the use of relatively thick saw blades so that saw blades of different thickness may be employed.

In order to provide a still wider range of movement for the attachment, the board and plate may be provided with a forwardly extending integral radial extension 25, 26, into which the slot 24 extends; and this extension may have its end rounded to serve as a handle and may have an angle projecting upward to serve as a second handle 36A.

The bottom of the board 18 is provided with a guide bar 27, comprising a rectangular bar of brass, which fits in the slot 13 in the bench saw table and slides freely therein.

The guide bar 27 preferably has a laterally turned end 28 which is adapted to strike the rear edge of the bench saw table 11 to limit the forward movement of the attachment so that the saw blade will never strike the end 29 of the slot 24.

A brass bar is preferably employed to avoid any possibility of the bar getting rusty and sticking in the groove 13.

The bar 27 is secured to the board 18 by a plurality of countersunk screw bolts or wood screws 29A, having both heads and nuts countersunk therein.

The table board 18 serves as a support to which the bar

may be secured without any securing members being visible from the top of the gauge plate, which may be kept smooth and unobstructed.

The attachment is provided with a guard **30**, comprising a top plate **31** and a pair of side plates **32**, **33** bent to conform to the shape of the top plate **31**, which may be tapered at **34**. The top plate **31** has a pair of securing bolts **35**, which extend through it and are provided with cap nuts **36** and with spacing tubes **37**, see Fig. 9.

The bolts **35** extend through the top plate and spacing tubes **37** and through apertures in the gauge plate **19** and the table board **18**, and are provided with countersunk nuts **38** below the table board **18**, supporting the guard **30** at its rear end.

At its forward end the guard is supported by a pair of pivot bolts **39** and **40** having nuts clamping the top plate of the guard to the pivot bolts; and each pivot bolt has its side welded to a guide rail **41** or **42** at the end of the vertical flange **43** of each guide rail.

The bolts **39** and **40** extend downward through the gauge plate **19** and table board **18** and are provided with countersunk heads or nuts below the board **18**. The bolts **39** and **40** extend normal to or at right angles to the plane of the top of the gauge plate **19**.

The guide rails **41** and **42** comprise angle members which preferably extend beyond the edge **20** of the gauge plate **19** so that the end portions may serve as handles **43A**. Each guide rail has a horizontal flange **44** and a vertical flange **43** at right angles to each other; and the vertical flange **43** serves as the guiding surface against which workpieces are held while they rest on the gauge plate **19**, which also has an upper plane surface.

Each guide rail is preferably tapered at the edge of its horizontal flange **44** inwardly to the bolt **39** or **40** so that the guide rails may come closer to the guard **30**, permitting the setting at angles as small as five degrees or smaller.

The guide rails **41** and **42** may also be pivoted forward until the flat guide surfaces of the vertical flange **45** come into parallelism with the slot **24** for angular settings down to zero.

Each guide rail **41** or **42** is provided with a clamping member **22** of substantially rectangular U-shape, see Figure 6. The yoke **46** of the clamping member **22** extends through an aperture **47** in the horizontal flange **43** of each rail; and the lower leg **48** of each clamping member is located below the outer edge of the gauge plate **19**.

The upper leg **49** of each clamping member is located above the horizontal flange **43** of each guide rail and has a threaded aperture for a clamping screw bolt **50**, which may have its head **51** provided with a transverse pin **52**; and it may have its threaded shank **53** threaded in the bore **54** of the leg **49** and provided with a rotatable head **55** engaging the horizontal flange **43**.

Thus the guide rails **41** and **42** pivot at their inner ends and may be clamped at their outer ends at any desired angular setting.

Each guide rail **41**, **42** preferably has a sliding stop member **56**, including a foot flange **57** that slides on the gauge plate **19**, see Fig. 5. A right angle flange **58** has a stop and a U-shaped portion **59** that embraces the top edge of the vertical flange **45** and is clamped to the guide rail by a set screw **60**.

The stop member **56** determines the length of the pieces which engage the vertical flange **58** and extend toward the saw blade.

The guard **31** may have an angle member **61** secured to its end with one flange projecting inwardly and serving as a handle.

The board **18** and the gauge plate **19** have circular edges, but do not comprise a complete circle. Instead they are formed on two arcs, using the axis of the pivot bolts **39** and **40** as centers; and each arc describes slightly more than a half circle.

Each pivot bolt is slightly spaced from the edge of the slot, such as, for example, one-eighth of an inch; and a line drawn through the axis of each pivot bolt **39** and **40**, parallel to the walls of the slot **24**, is in each case a diameter of the left half and the right half of the gauge plate.

Adjacent its outer edge the gauge plate is provided with a circular arc that is divided up into scale divisions, comprising radial marks separated by five degrees and by additional scale divisions indicating two degrees each. By interpolating between these division marks, one degree may be accurately determined; and the guide rails may be set at any desired degree. As the scale markings are located at the outer edge of the gauge plate, a high degree of accuracy may be attained.

One of the most important uses of the present attachment is for the making of ornaments of molding for flush type doors.

Figs. 10–14 are examples of the type of ornaments that may be manufactured by using the present attachment. The variations and shapes that may be manufactured with a minimum amount of time and labor are infinite; and the fit of the parts is exact, without divergence or grooves between the parts.

For making larger parts the guide rails may be provided with an extension **62**, comprising an angle which has a groove **63** and a set screw **64** for clamping the extension **62** on either one or both of the guide rails, see Figs. 1, 2 and 4.

The method of operation of the present attachment will be apparent from the foregoing description.

The attachment is applied to the top of the bench saw table, where it slides freely with the saw blade **14** in the slot **24**.

The guide rails may be set at any desired angle; and the workpieces may be held against the vertical flange of the guide rail while the attachment is slid from the front toward the back or from the back toward the front with the saw blade cutting the workpiece at the desired angle.

It will thus be observed that I have invented a bench saw attachment which is adapted to saw moldings, picture frames, inlaid parts, and any pieces of lumber that may be laid on the gauge plate, at angles which are extremely accurate, so that the parts may be fitted together to make ornaments, frames, and the like.

While I have illustrated a preferred embodiment of my invention, many modifications may be made without departing from the spirit of the invention, and I do not wish to be limited to the precise details of construction set forth, but desire to avail myself of all changes within the scope of the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States, is:

1. A bench saw attachment, adapted to be readily mounted or dismounted on a saw table, having a rotating blade projecting upwardly through a slot, and having a rectangular guide groove extending from front to back of said table, parallel to said blade, comprising a near circular plywood table top of maximum diameter with relation to the size of the table, and having a non-rusting non-ferrous guide bar fitting in said guide groove and secured to the bottom of said table top, to be placed in said guide groove for free sliding movement of the table top, said table top having a thin sheet metal gauge plate secured to the upper side of the table top, and provided with arcuate degree indicia and scale divisions over 360 degrees of arcuate edge, said table top and gauge plate both having registering through slots, closed at each end, and parallel to and receiving the saw blade, and extending from points adjacent the edge at the front and back, said table top and gauge plate comprising integral members formed with arcuate edges of slightly more than 180 degrees each on a pair of axes located adjacent the through slot but spaced from each other and located on

opposite sides of the through slot, a guard carried by the table top and the gauge plate over the rear part of the through slot, and comprising a guard top plate and a pair of guard side plates enclosing said blade, said guard being secured to the table top by through bolts located in said axes, binding the top guard plate and side plates to the gauge plate, and passing through the ends of a pair of guide rails of angular shape, outside the guard, each guide rail having a vertical flange, the front of which registers with an angular gauge setting at the outer edge of the gauge plate for providing maximum angular accuracy, and means for securing both guide rails in adjusted position.

2. A bench saw attachment according to claim 1, in which the securing means comprises a C shaped screw clamp passing through an aperture in the guide rail angle flange in each case and open inwardly toward the axes so that the screw clamp may engage over and clamp the arcuate edge of the gauge plate which extends beyond the table top.

3. A bench saw attachment according to claim 2, in which the guide bar is provided at its rear end with a laterally turned portion acting as a stop in limiting the forward motion of the table top and the table top has a forward handle extension containing the end of the through slot, and providing means for the user to grasp said extension to move the table top.

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