July 15, 1958 E. R. RUSHTON 2,843,167

UNIVERSAL MORTISE AND BORING JIG FOR DOOR LOCKS

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FIG. 1.

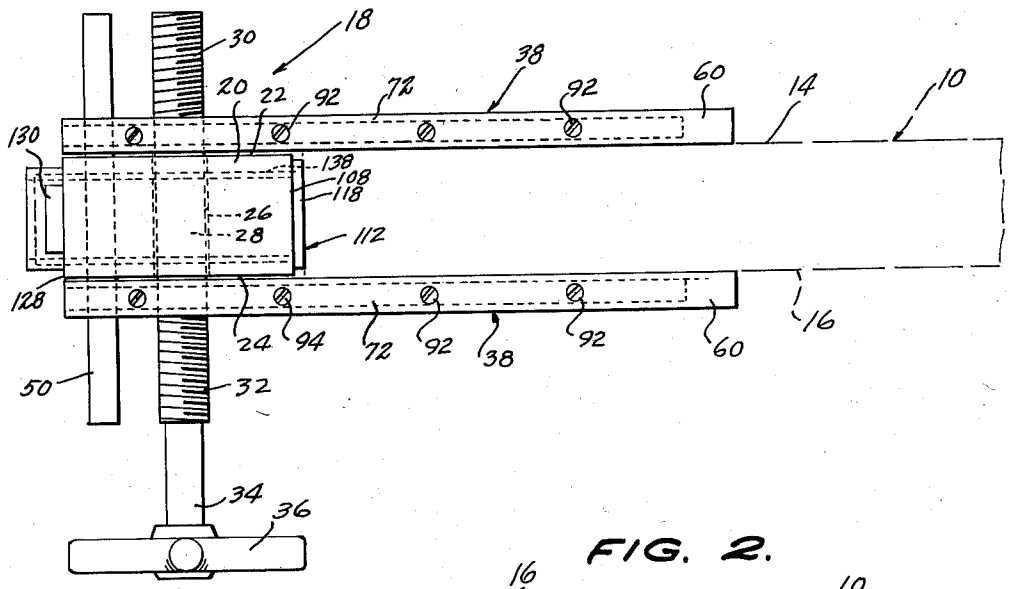
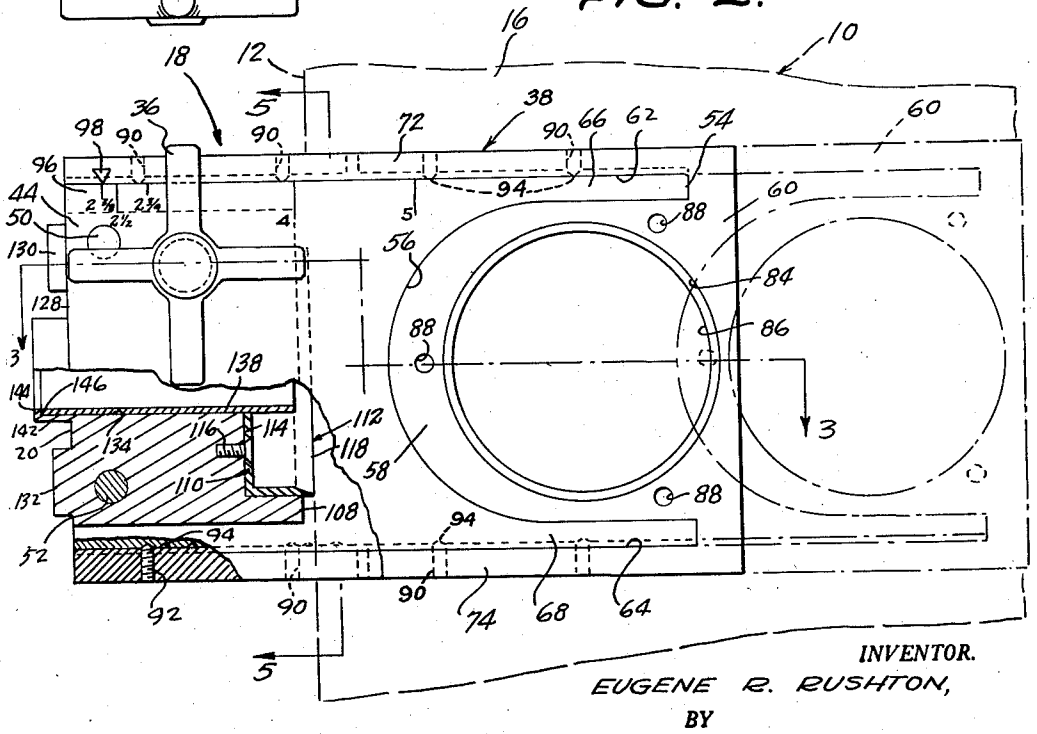


FIG. 2.



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FIG. 3.

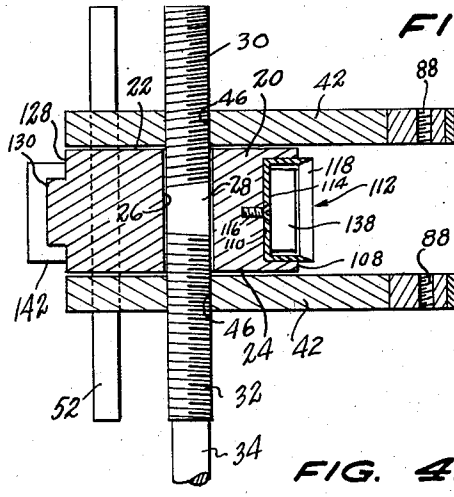


FIG. 7.

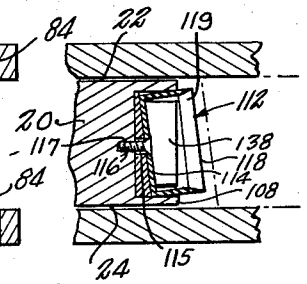


FIG. 8.

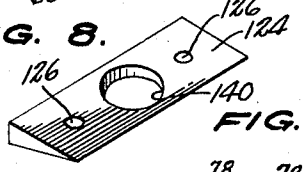


FIG. 4.

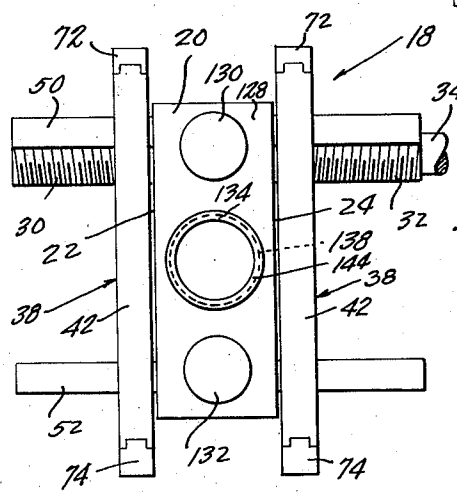


FIG. 5.

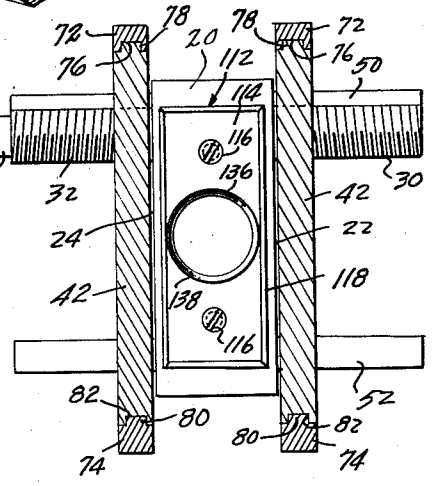
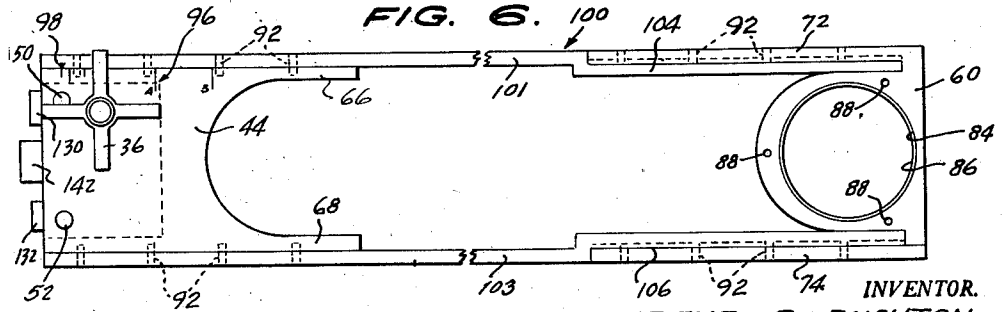


FIG. 6.



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UNIVERSAL MORTISE AND BORING JIG FOR DOOR LOCKS

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Application June 1, 1956, Serial No. 588,771

2 Claims. (Cl. 144—76)

This invention relates to an improved mortise and boring jig for use in installing, on such as flush doors, tubular and cylindrical locks having different back-sets of operating knobs.

Because of requirements of mass production and stepped-up building schedules in the home building industry, and scarcity of skilled labor, such as carpenters, there is a demand for means to reduce the elements of error in building practices so as to eliminate loss of time as well as waste of material. Installation of hardware on new doors, although appearing to be relatively simple, is an operation which requires accuracy and skill, and when not done properly can result in waste of time and material which increase the cost of construction. The home building industry, for example, uses tubular and cylindrical locks with various amounts of knob back-set for the purpose of affording a greater degree of balance or application of force when the door is manipulated, as well as providing a highly desirable aesthetic appearance. An installation of back-set locks which may have latch bolts up to eighteen inches in length, requires a great deal of accuracy in order to obtain proper functioning thereof.

The primary object of the invention is to provide a unitary and more practical and efficient mortise and boring jig for installing back-set locks, which has means for easily and expeditiously scribing a mortise for a latch-bolt plate, drill bit guide means for boring a transverse latch-bolt bore in the vertical edge of a door in its proper oriented position relative to the lock-latch plate, and drill bit guide means for boring a transverse lock assembly bore through opposite side portions of a door in intersecting relationship to the latch-bolt bore for receiving a lock assembly therein, which includes a "back-set" door knob and the latch mechanism of the lock, and means for retaining the jig in a proper oriented position relative to a lock assembly bore.

Another object of the invention is to provide in a device of the character indicated, replaceable means for accommodating different diameter latch-bolts as well as different sized latch-bolt plates, and extensible drill guide means for facilitating the installation of "back-set" lock assemblies in properly orientated positions for different length latch bolts.

A further object of the invention is to provide in a device of the character set forth, improved means for orientating back-set lock assemblies having exceedingly long latch bolts, and means for facilitating installation of lock assemblies in doors having bevelled vertical edges.

A still further object of the invention is to provide a device of the character set forth which can be made in rugged and serviceable forms at relatively low cost, is easily used and maintained, and is highly accurate, efficient and satisfactory for the purpose intended.

These together with other objects and advantages which will become apparent reside in the details of construction and operation as more fully hereinafter described

and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout the several views, and in which:

Figure 1 is a top plan view of a mortise and boring jig in accordance with the present invention, positioned on the vertical edge of a door upon which a "back-set" lock is to be installed;

Figure 2 is a side elevational view of Figure 1 with portions broken away and in section, showing the jig extended in phantom lines, to accommodate for installation of a back-set lock having a long latch-bolt;

Figure 3 is a contracted fragmentary horizontal sectional view taken substantially on line 3—3 of Figure 2, with a portion of the clamping handle removed;

Figure 4 is a fragmentary end elevational view, looking from left to right in Figure 2;

Figure 5 is a fragmentary transverse vertical sectional view taken substantially on line 5—5 of Figure 2;

Figure 6 is a side elevational view, on a reduced scale, showing extension means incorporated in the jig for use in installing "back-set" lock assemblies having relatively long latch-bolts;

Figure 7 is a fragmentary sectional view similar to the Figure 3, showing means for accommodating the jig to a door having a beveled vertical edge; and

Figure 8 is an enlarged perspective view of a wedge component of the means of Figure 7.

Referring to the drawings in detail, there is shown a fragmentary portion of a door **10** having a vertical edge **12**, and opposite sides **14** and **16**, and being of the type to have installed thereon a "back-set" lock, with the aid of a mortise and boring jig, indicated generally at **18**.

The jig **18** comprises a rectangular back **20** having extending through opposite sides **22** and **24** a transverse bore **26**, see Figures 1 and 3, which has journaled therein a transverse clamping screw **28** having oppositely threaded end portions **30** and **32**. On one end of the screw **28** is an unthreaded terminal **34** on which is secured a cruciform handle **36**, as clearly shown in Figures 1 and 2.

Located at opposite sides of the block **20** are similar elongated rectangular plate assemblies **38** which comprise mounting plates **42** having oppositely threaded aligned holes **46** in which are threaded the oppositely threaded portions **30** and **32** of the clamping screw **28**, so that rotation of the screw **28** by means of the handle **36** produces movement of the clamping plate assemblies toward and away from each other. In order to prevent rotation of the clamping plate assemblies about the clamping screw **28** when the screw is rotated, the block **20** has slidably extending therethrough and through the plates **42** parallel to the bore **26** a pair of vertically spaced horizontal rods **50** and **52**.

The plates **42** have inner ends **54** in which are notches **56** which receive therein suitably shaped projections **58** on drill bit guide plates **60**. The plates **60**, as shown in Figure 2, have upper and lower horizontal slots **62** and **64**, above and below the projections **58**, which receive horizontal arms **66** and **68**, respectively, on the inner ends **54** of the plates **42**, the arms **66** and **68** being defined by the notches **56**. As shown in Figures 2, 4 and 5, the upper edges of the plates **42** have thereon reduced width ribs or tracks **78** which are received slidably within grooves **76** in the undersides of elongated bars **72** on and projecting from the outer ends of the plates **60**. In the lower edges of the plates **42** are grooves **82** in which are slidably engaged tracks or ribs **80** on elongated bars **74** projecting from the outer ends of the plates **60**.

The drill bit guide plates **60** have thereon transversely

aligned drill bit openings **84** which may have suitably secured therein bushings **86** of any suitable character to resist excessive wear by drill bits used therein for the purpose of drilling a hole through a door **10** for accommodating the latch mechanism of a back-set lock to be installed. In order to provide additional support for the jig, especially when a lock having an exceedingly long latch bolt is to be installed, the plates **60** have in spaced relationship to the device bit guide opening **84**, a plurality of small threaded holes **88** for end-pointed screws (not shown) for engaging the opposite sides of the door **10** for retaining the jig relative to the knob position of a lock assembly.

Extending vertically through the bars **72** and **74** on the plates **60** are pluralities of longitudinally spaced threaded holes **90** which receive therein locking screws **92** which are engageable in detent recesses **94**, see Figure 2, in the related upper and lower edges of the plates **42**, so as to retain the plates **60** in retracted or extended positions, such as shown in phantom lines in Figure 2, for the purpose of locating the drill guide openings **84** at a greater distance inwardly from the edge **12** of the door for drilling a hole therein for a lock having an exceptionally long latch bolt.

Because building specifications generally call for locks having latch bolts of substantially conventional or uniform lengths, a scale **96** may be provided on the plates **42**, see Figure 6, and a suitable pointer **98** may be provided on the upper bars **72** of the plates **60**. The detent recesses **94** are located and spaced in relation to the marks of the scale **96** and to the pointer **98**.

In the event it is necessary to install a "back-set" lock assembly having an exceedingly long latch bolt, such as, seven, ten or eighteen inches long, the mounting plates **42**, see Figure 6, may have mounted on their upper and lower edges by means of locking screws **92**, removable extension assemblies **100** having upper and lower bars **101** and **103** having groove and rib means (not shown) similar to those on the bars **72** and **74** on the plates **60**, as shown in Figure 5, providing for mounting of extension drill bit guide assemblies **100** on the plates **42** in the places of the plates **60**. The extension bars **101** and **103** have laterally inwardly offset portions **104** and **106**, respectively, on which the bars of the plates **60** are adapted to be mounted in the same way as on the upper and lower edges of the plates **42**, whereby the drill bit guide openings of the plates **60** can be reached to and supported at the necessary distances inwardly from the edge **12** of a door **10**, for an extra long lock bolt.

The block **20** has formed in its inner end **108** a recess **110** which may be rectangular, as shown, or any other suitable form, which receives therein a miter blade assembly indicated generally at **112**. The miter blade assembly **112** is utilized for scribing or cutting out a recess in the vertical edge **12** of a door **10** for accommodating a latch bolt plate of a back-set lock assembly. The miter blade assembly **112** includes a plate **114** having extending transversely therethrough suitable holes **115** receiving therethrough retaining screws **116** to be secured in suitable threaded holes **117** in the bottom of the recess **110**. Extending about the periphery of the plate **114** of the miter blade assembly and normal thereto is a peripheral cutter blade **118** having a cutting edge **119** which extends beyond the end **108** of the block **20** and which can penetrate into the door edge **12** for cutting therein a recess for a latch bolt plate. The outer end **128** of the block **20** has projecting therefrom vertically spaced anvils **130** and **132** adapted to be struck by a hammer for driving the cutter blade **118** into the door edge **12**.

In the event that the vertical edge **12** of a door **10** is beveled, as indicated in dotted lines in Figure 7, it is necessary to set the miter blade assembly **112** and the cutting blade **118** thereof parallel to the door edge.

This is accomplished by inserting behind the blade plate **114** of the miter blade assembly a suitably shaped wedge **124** which has the same angularity as the door edge, and has therein openings **126** for accommodating screws **116**. Although a separate wedge element **124** has been shown for the purpose of cooperating with the beveled edged doors, the miter blade assembly could be made with such portion integral therewith and thus the miter blade assemblies would be interchangeable depending upon the type of door used.

The block **20** has extending through the outer end **108** a longitudinal bore **134** which opens at its inner end into the recess **110** and communicates with a central hole **136** in the plate **114** of the miter blade assembly. Disposed through the bore **134** and through the hole **136** is a removable tubular bushing **138** for guiding drill bits for drilling bores in the door edge **12** for latch bolts of back-set lock assemblies. As shown in Figure 8, the wedge **124** includes a central hole **140** for accommodating therethrough the bushing **138** when the wedge is in use in recess **110**.

In order to prevent the bushing **138** from being withdrawn from the block **20** an annular retaining collar **142** is secured to the block **20** and has an inturned end portion **144**, see Figure 2, which is engageable around the outer end **146** of the bushing **138**. The bushings **138** may be of varying inside diameters for accommodating varying diametered latch-bolts of different lock assemblies.

The foregoing is considered as illustrative only of the principles of the invention. Since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, as fall within the scope of the appended claims.

What is claimed is:

1. In a mortise and boring jig, a block having parallel sides and inner and outer ends, said block having a transverse journal bore opening through said sides, a pair of similar clamping plate assemblies engaged with said sides of the block and extending longitudinally inwardly beyond said inner end of the block, said assemblies having aligned oppositely threaded holes therethrough aligned with said journal bore, a transverse clamping screw journaled in said journal bore and having oppositely threaded end portions threaded in said threaded holes, means on an end of said screw for rotating the screw in opposite directions to move said assemblies toward and away from each other, and means for engaging said block and said assemblies for preventing rotation of the assemblies on the clamping screw, said assemblies comprising relatively stationary mounting plates containing said threaded holes, said mounting plates having inner ends and upper and lower longitudinal edges, and drill bit guide plates positioned at the inner ends of the mounting plates, said guide plates having outer ends, said guide plates having longitudinal arm means extending outwardly beyond their outer ends and supportably engaged with the upper and lower longitudinal edges of the mounting plates, said guide plates having therein transversely aligned drill bit guide holes, longitudinal rib and groove means acting between said arm means and the upper and lower edges of the mounting plates and mounting the guide plate arm means on the edges of the mounting plates, locking screws traversing said arm means, and detent recesses in the longitudinal edges of the mounting plates selectively engageable by the locking screws to hold the guide plates in longitudinally adjusted relations to the mounting plates.

2. In a mortise and boring jig, a block having parallel sides and inner and outer ends, said block having a transverse journal bore opening through said sides, a

pair of similar clamping plate assemblies engaged with said sides of the block and extending longitudinally inwardly beyond said inner end of the block, said assemblies having aligned oppositely threaded holes therethrough aligned with said journal bore, a transverse clamping screw journaled in said journal bore and having oppositely threaded end portions threaded in said threaded holes, means on an end of said screw for rotating the screw in opposite directions to move said assemblies toward and away from each other, and means for engaging said block and said assemblies for preventing rotation of the assemblies on the clamping screw, said assemblies comprising relatively stationary mounting plates containing said threaded holes, said mounting plates having inner ends and upper and lower longitudinal edges, and drill bit guide plates positioned at the inner ends of the mounting plates, said guide plates having outer ends, said guide plates having longitudinal arm means extending outwardly beyond their outer ends and supportably engaged with the upper and lower longitudinal edges of the mounting plates, said guide plates having therein transversely aligned drill bit guide holes, longitudinal rib and groove means acting between said arm means and the upper and lower edges of the mounting plates and mounting the guide plate arm means on the edges of the mounting plates, locking screws traversing said arm means, and detent recesses in the longitudinal edges of the mounting plates selectively engageable by the locking screws to hold the guide plates in longitudinally adjusted relations to the mounting plates, said arm means comprising longitudinal arms fixed on and projecting beyond the outer ends of the guide plates, longitudinally elongated extension arms having outer end portions which said rib and groove means mount on the upper and lower edges of the mounting plates, said extension arms having laterally inwardly offset rear end portions, with the fixed arms of the guide plates mounted longitudinally on said rear end portions.

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