May 21, 1929. J. A. WALLER 1,713,727

MORTISING TOOL

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Fig. 1

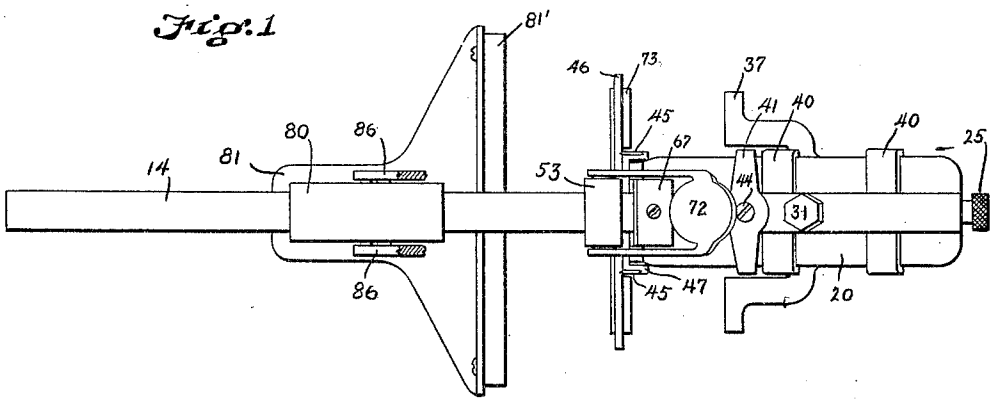


Fig. 2

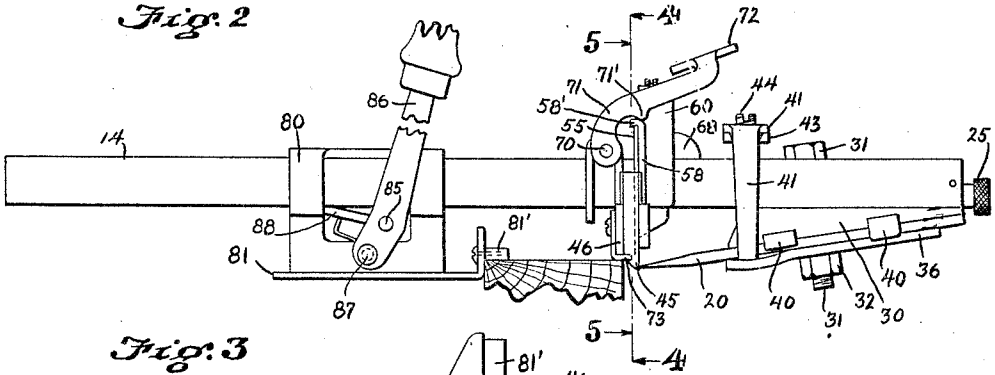


Fig. 3

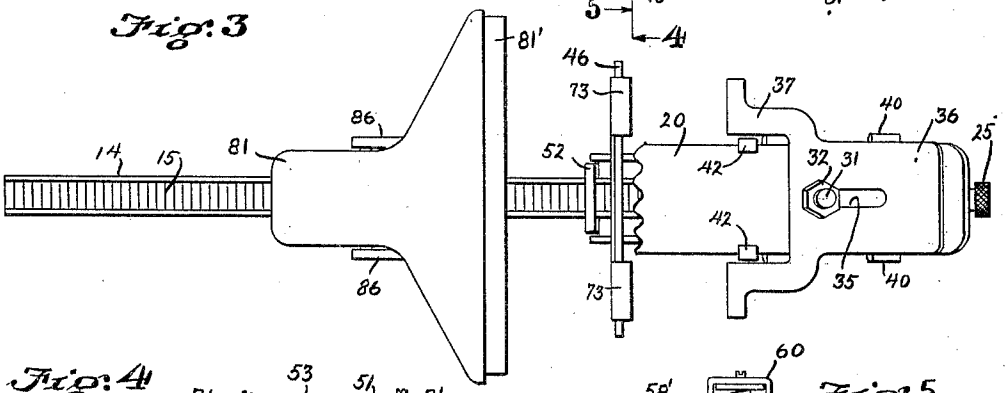


Fig. 4

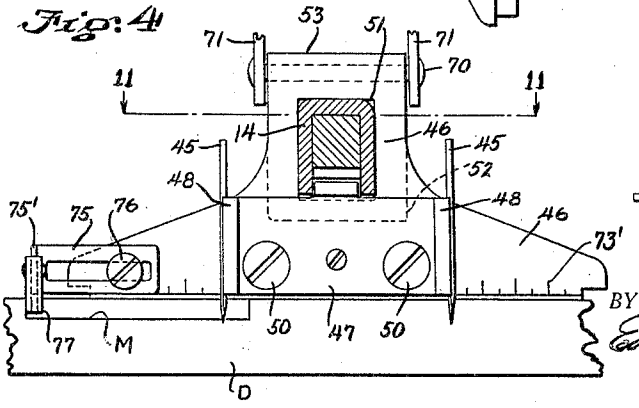
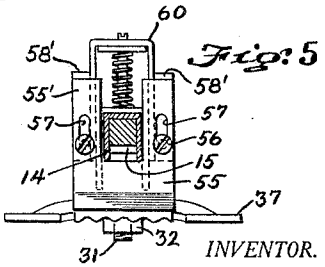


Fig. 5



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MORTISING TOOL

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Fig. 6

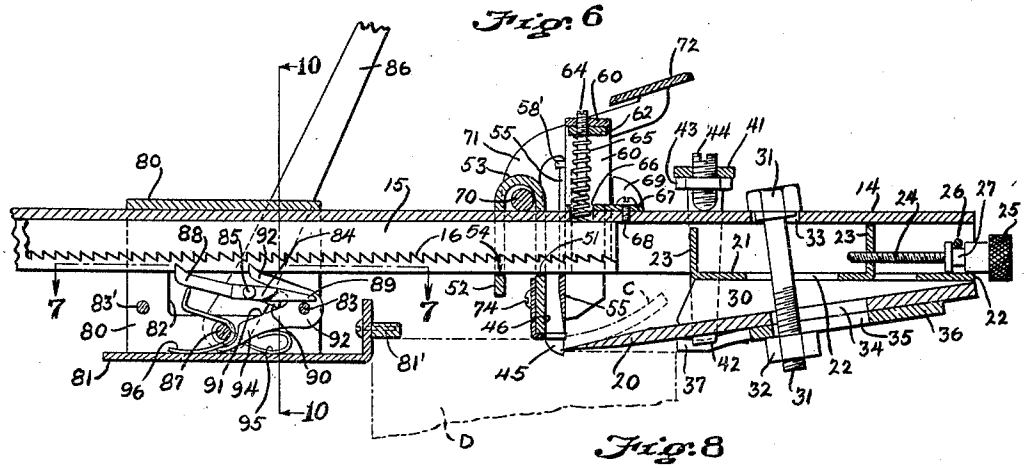


Fig. 8

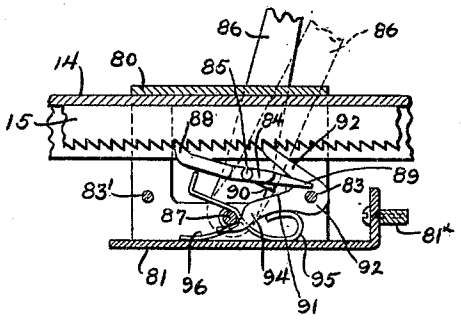


Fig. 7

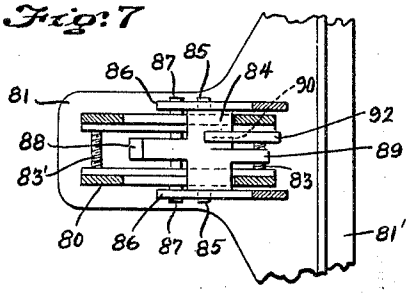


Fig. 9

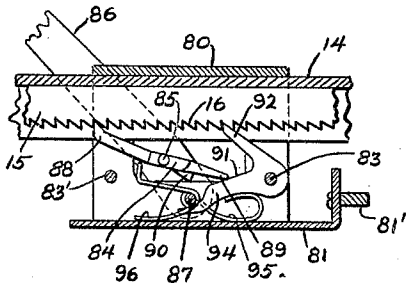


Fig. 10

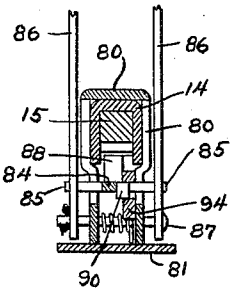


Fig. 12

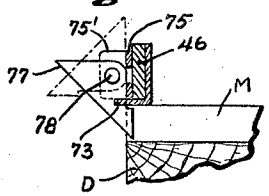
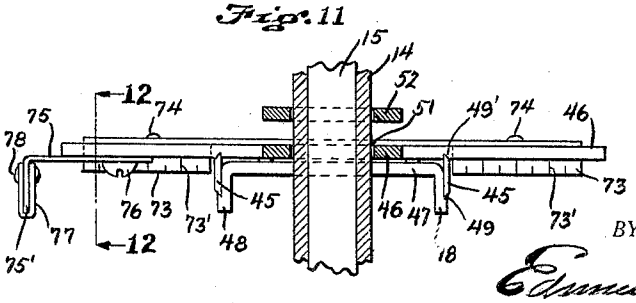


Fig. 11



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Patented May 21, 1929. 1,713,727

UNITED STATES PATENT OFFICE.

JOHN A. WALLER, OF LOS ANGELES, CALIFORNIA, ASSIGNOR TO THE STANLEY WORKS, OF NEW BRITAIN, CONNECTICUT, A CORPORATION OF CONNECTICUT.

MORTISING TOOL.

Application filed September 1, 1926. Serial No. 133,023.

The object of this invention is to provide a tool for forming mortises in doors and the like for the reception of hinge leaves, wherein the cutting knives may be quickly adjusted or removed, whereby the tool may be adjusted for accurate formation of the desired cut, and whereby the knives may be positively fed forward by a feeding device whose parts may be easily thrown into inoperative position for quick return of the feeding mechanism to initial position.

The invention constitutes an improvement over that disclosed in my allowed application Serial No. 1,812, filed January 12, 1925, Patent No. 1,603,652, Oct. 19, 1926, and comprises a tool frame upon which there are mounted a bottom forming chisel, end-wall forming knives, a back-wall forming knife which cuts off the chip, a gauge for accurately positioning the tool, and a feeding mechanism which includes a sliding yoke having a handle upon which there is mounted a feeding pawl which cooperates with and actuates a locking pawl or dog on the yoke, both of said pawls working upon a toothed rack on the tool frame and being releasable therefrom by movement of the handle. The invention resides further in the various features, construction of parts and combinations herein set forth and more particularly pointed out in the claims.

In the accompanying drawings, wherein certain embodiments of the invention are disclosed by way of illustration:

Fig. 1 is a top plan of the tool embodying the present improvements;

Fig. 2 is a side elevation thereof;

Fig. 3 is a bottom plan;

Fig. 4 is a transverse view taken on the line 4—4 of Fig. 2 showing the holder which carries the end-wall forming knives and the gauge;

Fig. 5 is a transverse section taken on the line 5—5 of Fig. 2;

Fig. 6 is a longitudinal vertical section through the tool;

Fig. 7 is a horizontal sectional detail of the feeding mechanism taken on line 7—7 of Fig. 6;

Figs. 8 and 9 are details showing in elevation two other positions of the pawls of the feeding mechanism;

Fig. 10 is a cross sectional view taken on line 10—10 of Fig. 6;

Fig. 11 is a horizontal detail taken from line 11—11 of Fig. 4; and

Fig. 12 is a vertical detail taken on line 12—12 of Fig. 11.

The tool frame or body consists of a channel bar 14 between whose side wall is fixedly secured a rack or bar 15 toothed at 16 for cooperation with the pawls of the feeding mechanism as hereinafter described. The rear end of the body 14 carries a bottom-wall forming chisel 20 mounted through the medium of a chisel frame 21 slotted at 22 and having upwardly disposed positioning lugs 23 fitting between the side wall of channel 14, said chisel frame being adjustable by means of a screw 24 whose knob 25 projects beyond the frame for manipulation. A pin 26 in frame 14 is received in an annular groove 27 of knob 25 and holds the same against longitudinal movement during adjustment. Depending from the frame 21 is a pair of tapered or wedge-shaped side walls 30 which give the chisel 20 its pitch and against which said chisel is bound by means of bolt 31 and nut 32, the head of the bolt being shouldered to be partially received in an opening 33 in body 14 and passing through slot 22 of frame 21, through a slot 34 in the chisel and through a slot 35 in a bearing plate 36 which is positioned against the lower face of the chisel and which is directly engaged by the nut 32. For the purpose of limiting the cut in the work, the plate 36 is provided with a pair of laterally extending arms 37 whose extremities are arranged to lie approximately in the plane of the cutting edge of chisel 20. Steadying of the forward portion of the chisel 20 is accomplished by means of a strap or yoke 41 which passes around body 14 and is provided with fingers 42 which engage beneath the edges of the chisel, a reinforcing bar 43 and a screw 44 being provided for binding said strap against the top of channel 14.

The end walls of the mortise are cut by a pair of vertically positioned knives 45 which are adjustably mounted upon a supporting plate 46 mounted transversely on body 14, said plate also serving as a gauge plate as presently to be described. The knives 45 are retained by means of a clamping bar 47 having flanges 48 notched at 49 to receive one edge of each knife and cooperating with notches 49′ in plate 46 to

receive the opposite edge, the position being maintained by means of binding screws 50. Plate 46 is carried on body 14 by means of an opening 51 in which the body fits, the mounting being made more rigid by means of a hook like extension 52 of plate 46 which is connected by a bend 53 and in turn has an opening 54 in which also the body 14 fits, thus making it possible to slidably adjust or remove the plate 46.

The back wall of the mortise is cut by a vertically disposed transversely arranged plunger blade 55 which serves to sever the chip C after the end and bottom walls have been cut. This blade 55 extends below body 14 and has arms 55′ which extend upward alongside thereof and are adjustably secured by means of screws 56 and slots 57 to flanges 58 of a vertically movable bracket 60, the upper ends of said flanges 58 overhanging the arms 55′ of blade 55 as indicated at 58′. The top bar of bracket 60 is reinforced with a plate 62 through both of which there is threaded a positioning pin 64 for a returning spring 65 whose lower end seats in an opening in body 14 and rests on toothed bar 15. A small plate 67 which is secured to body 14 by screw 68 is provided at its sides with upstanding flanges 69 which bear against the edges of bracket 60 and maintain the same and blade 55 in operative position. For the purpose of depressing blade 55 to cut out the chip C, a pintle 70 is passed through the bend 53 of the hooked portion of plate 46, this pintle serving to mount a yoke-shaped lever 71 having a striking plate 72 whereby a blow from the operator's hand will cause offsets 71′ on lever 71 to engage the overhanging portions 58′ of flanges 58 and depress blade 55 to cut the back wall of the mortise.

For properly positioning the tool to cut the desired mortise or successive sections thereof, the plate 46 is provided at its lower edge with an angle-shaped gauge bar 73 upon which graduations 73′ are provided, this construction cooperating with an adjustable slide 75 secured to one end of plate 46 by a set screw 76, a guide 77 being pivoted at 78 to a flange 75′ of the slide 75. Thus the guide 77 may be caused to engage the edge of a door or window sash or the end of a section or mortise already cut, or it may be swung up out of operative position.

For the purpose of drawing the chisel 20 and knives 45 into the piece of work to cut a mortise, an improved feeding device is mounted on body 14, this device being in the form of a sliding frame 80 which is looped around the body 14 and is provided with a flat bottom wall 81 having an upturned flared end and an offset ledge forming jointly an abutment jaw 81′ to engage the work for pressing the same against the mortising elements 20 and 45. The side walls of frame 80 are provided with openings 82 and are connected with bolts 83 and 83′, while the lateral extensions of a lever 84 project into and work in said openings, the ends of said extensions having trunnions 85 whereby the lever is fulcrumed in the bifurcations 86 of a forked handle pivoted on a pin 87 passing through said frame. The lever 84 carries a forwardly extending arm 88 in the form of a feeding pawl adapted for engagement with the teeth 16 of the toothed bar 15, while at its rear side it carries an arm 89, see Fig. 9, adapted to ride up over the bolt 83. On its lower side at the rear, lever 84 is provided with a downwardly offset finger 90 which is adapted to engage and ride up on a cam surface 91 of the depending arm of a locking pawl or dog 92 pivoted on bolt 83. The upper arm of said dog is adapted to engage the teeth 16 of bar 15 to prevent return of the frame 80, while the depending arm 94 thereof is engaged by a spring 95 to force the dog up into engagement with said teeth 16, the extremity of arm 94 engaging under pin 87 to limit upward movement of said dog when frame 80 is removed from the tool. The outer end of the pawl 88 is engaged by a spring 96 which tends to urge said pawl into engagement with the teeth 16, such engagement being effected when the rear end 89 and the finger 90 are disengaged from the bolt 83 and the cam face 91 respectively.

In the operation of the tool, the chisel 20 and the end-wall cutting knives 45 are adjusted for the desired cuts, and the frame 80 is slid into position on the body 14 with the abutment member 81′ engaging the edge of the door D or window sash, and the handle 86 is brought into the full line position of Fig. 8 where the dog 92 and the pawl 88 engage the teeth 16 of bar 15. As said handle is moved from said full line position in the direction of the arrow toward the position of Fig. 9, the pawl 88 maintains its engagement with teeth 16 and the frame 80 is forced relatively along the body 14 through the medium of the trunnions 85, handle 86 and pin 87, the dog 92 riding over the teeth 16, whereby the chisel 20 and knives 45 are forced through the work. If the amount of cut formed by a single stroke of the handle is not sufficient, the handle is returned to the full line position of Fig. 8, during which movement the dog 92 prevents shifting of the frame 80, and another stroke is made. When the required amount of cut has been made by chisel 20, the plate 72 is struck whereby lugs 71′ of lever 71 engage the overhanging portions 58′ of flanges 58 and force the blade 55 downward to cut the back wall of the mortise and sever the chip C. In order to shift the tool along the work to increase the length of the mortise, the handle 86 is moved from the position of

Fig. 9 into the position of Fig. 6 in the direction of the arrow of Fig. 6, which is the dotted line position of Fig. 8, which movement causes the finger 90 to ride up on the cam face 91 of the depending arm 94 of dog 92, thereby depressing said arm 94, withdrawing the dog 92 from the teeth 16, elevating the finger 90 and causing the arm 89 to ride over the bolt 83, and at the same time withdrawing the pawl 88 from the teeth 16. This disengagement of dog 92 and pawl 88 from the teeth of bar 15, frees the frame 80 so that it may be slid forward along body 14 for re-positioning of the tool on the work. When handle 86 is returned to said full line position, finger 90 disengages cam face 91 and the springs 95 and 96 return pawls 92 and 88 to tooth engaging position. In order to increase the length of the mortise M (Fig. 4) the desired amount, the gauge 77 is swung down into the mortise (Figs. 4 and 12) and the slide 75 on plate 46 is properly set with respect to the graduations on scale 73′ to yield the desired cut, the cutting operation being repeated as above.

What I claim is:

1. A mortising tool comprising a body, a knife carrier mounted thereon having a gauge plate disposed transversely of the body, and a gauge adjustable upon said plate for determining the length of cut.

2. A mortising tool comprising a body, a knife carrier mounted thereon having a gauge plate disposed transversely of the body, and a gauge adjustable upon said plate for determining the length of cut, said gauge being also swingingly mounted to move to and from engagement with a wall of the work.

3. A mortising tool comprising a channel bar, a chisel frame mounted upon said bar, means for adjusting the position of said frame along said bar, and a bottom-wall forming chisel adjustably mounted upon said frame.

4. A mortising tool comprising a channel shaped bar, a chisel frame having a guiding member slidable within the bar, means for adjusting the position of the frame upon the bar, and a chisel mounted upon the frame.

5. A mortising tool comprising a body, a chisel frame mounted upon the body, means for adjusting the position of the frame upon the body, a chisel secured to the frame by means of a bolt passing through the chisel frame and body, and a yoke engaging the chisel adjacent its cutting end for binding the chisel to the frame and body.

6. A mortising tool comprising a body, a chisel frame movably mounted upon the body, means for adjusting the position of said frame, a chisel secured to the frame, and a yoke engaging the chisel adjacent its cutting portion for binding the chisel in operative position.

In witness that I claim the foregoing I have hereunto subscribed my name this 2nd day of August, 1926.

JOHN A. WALLER.