

MECHANICK
EXERCISES,

OR,

The Doctrine of
Handy-works,

*From May the 1. to June the 1.
1678. And is intended to be
Monthly continued.*

By *Joseph Moxon* Hydrographer to
the King's most Excellent Majesty.



L O N D O N,
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Here follow:
Pages 80 to 85

To wit, the Section on
Mortessing of particular
use to the *Joiner*.



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sign of
Tools For Working Wood in
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minisht in working, and apply the flat of the Oval to each side of the first side, and Gage as before two lines, one on the second, the other on the third wrought side. Work your stuff then down on the fourth side to these two Gage lines, either with Plaining alone, or with Hewing and afterwards Plainings, as you were taught to work the second side.

§ 17. *To Frame two Quarters Square, into one another.*

You must take care in Mortessing and Tennanting, that as near as you can you equallize the strength of the sides of the Mortess to the strength of the Tennant. I do not mean that the stuff should be of an equal Substance, for that is not equallizing strength: But the equallizing strength must be considered with respect to the Quality, Position and Substance of the Stuff. As if you were to make a Tennant upon a piece of Fir, and a Mortess to receive it in a piece of Oak, and the Fir and Oak have both the same size. The Tennant therefore made upon this piece of Fir must be considerably bigger than a Tennant need be made of Oak, because Fir is much a weaker wood than Oak, and therefore ought to have a greater Substance to equallize the strength of Oak. And for Position, the shorter the stuff that the Tennant is made on, the less Violence the Tennant is subject to. Besides it is easier to split wood with the grain, than to break wood cross the grain; and therefore the same wood when posited as a Tennant is stronger than the same wood of the same size when posited as a Mortess: for the injury a Mortess is subject to is splitting with the grain of the wood, which without good care it will often do

do in working: but the force that must injure a Tennant must offend it cross the grain of the wood, in which position it will best indure violence.

When two pieces of wood of the same quality and substance (as in this our Example) are elected to make on the one a Tennant, and in the other a Mortess. If you make the Mortess too wide, the sides of the Mortess will be weaker than the Tennant; or, if too narrow, the Tennant that must fit the Mortess will be weaker than the sides that contain the Mortess: And if one be weaker than the other the weakest will give way to the strongest when an equal violence is offer'd to both. Therefore you may see a necessity of equallizing the strength of one to the other, as near as you can. But because no Rule is extant to do it by, nor can (for many considerations I think) be made, therefore this equallizing of strength must be referred to the Judgment of the Operator. Now to the work.

The Mortess to be made is in a Quarter four Inches broad. In this case workmen make the Mortess an Inch wide, so that an Inch and an half stuff remains on either side it. Therefore your stuff being squar'd as was taught in the last Section, Set the Oval of the Gage an Inch and an half off the Tooth, and gage with it on either side your stuff a straight line at that distance from the end you intend the Mortess shall be: then open your Compasses to two Inches, and prick off that distance in one of the lines, for the length of the Mortess: then lay the inside the Handle of the Square to one side of the stuff, and upon both the pricks successively, and with your Pricker draw straight lines through them by the side of the Tongue, so shall the bounds of your Mortess be struck

struck out on the Quarter. If your Mortels go through the Quarter, draw the same lines on the opposite side of the Quarter, thus, Turn the Quarter on its edge, and apply the inside of the Handle of the Square to the ends of the former drawn lines, and by the side of the Tongue draw two lines on the edge of the Quarter, then turn the Quarter again with its other broad side upwards, and apply the inside of the Handle of the Square to the ends of the last lines drawn on the edge, and by the side of the Tongue draw two lines on this broad side also. These two lines (if your quarter was truly squar'd) shall be exactly opposite to the two lines drawn on the first broad side of the quarter, for the length of the Mortels: And for the width of the Mortels Gage this side also, as you did the first: then for the Tennant, Gage on that end of the Quarter you intend the Tennant shall be made, the same lines you did for the Mortels. And because the Quarter is two Inches thick, prick from the end two Inches, and applying the inside of the Handle of the Square to the side of the Quarter, and the Tongue to that Prick, draw by the side of the Tongue a line through that side the Quarter: then turn the other sides of the Quarter successively, and draw lines athwart each side the Quarter, as you were taught to draw the opposite lines for the Mortels.

Then place the edge of the Inch Mortels Chissel with its Basil from you, and the Helve bearing a little towards you, within one half quarter of an Inch of one end of the struck Mortels, and with your Mallet knock hard upon it, till you find the Basil of the Chissel will no longer force the chips out of the Mortels: then remove the Chissel to the other end
of

of the Mortels, and work as with the first end, till the Chips will void no longer: Then work away the Stuff between the two Ends, and begin again at one of the ends, and then at the other, and work deeper into the Mortels, then again between both; and so work deeper by degrees, till you have wrought the Mortels through, or (if not through) to the intended depth: then with the Mortels Chissel work nearer the drawn lines at the ends of the Mortels (for before you were directed to work but within half a quarter of an Inch of the drawn lines,) by laying light blows on it, till you have made it fit to pare smooth with a narrow Paring Chissel, and then pare the ends, as you were taught to work with the Paring Chissel: then with the broad Paring Chissel, pare the sides of the Mortels just to the struck lines; so is the Mortels finished.

To work the Tennant lay the other Quarter on edge upon your Work Bench, and fasten it with the Holdfast, as you were taught Sect. I. Then with the Tennant Saw Saw a little without the struck line towards the end: you must not Saw just upon the struck line, because the Saw cuts rough: Besides, you must leave some stuff to pare away smooth to the struck line, that the *Stile* (that is, the upright Quarter) may make a close Joynt with the *Rail* (that is) the lower Quarter: Saw therefore right down with the Tennant Saw, just almost to the gaged lines for the thickness of the Tennant, and have a care to keep the Blade of the Saw exactly upright. Then turn the opposite side of the Quarter upwards, and work as you were taught to work the first side.

Then with the paring Chissel, pare the work
O close

close to the gaged lines for the Tennant. Then try how it fits the Mortels: If it be not pared enough away, you must Pare it where it Bears, that is, sticks. But if you should chance to have made it too little, you have spoiled your work: Therefore you may see how necessary it is not to make the Mortels too wide at first, or the Tennant too narrow.

Then with the Piercer pierce two holes through the sides or cheeks of the Mortels, about half an Inch off either end one. Then knock the Tennant stiff into the Mortels, and set it upright by applying the angle of the outer square to the angle the two Quarters make, and with your Pricker prick round about the insides of the Pierced holes upon the Tennant. Then take the Tennant out again, and Pierce two holes with the same Bit about the thickness of a shilling above the Pricked holes on the Tennant, that is, nearer the sholder of the Tennant, that the Pins you are to drive in may draw the sholder of the Tennant the closer to the flat side of the Quarter the Mortels is made in. Then with the Paring Chissel make two Pins somewhat Tapering, full big enough, and setting the two Quarters again square as before, Drive the Pins stiff into the Pierced holes.

If you make another Square as you did this, and make also a Tennant on each un-Tennanted end of the Stiles, and another Mortels on the top and bottom Rails, you may put them together and make square Frame of them.

§ 18. *Of the Miter Square. And its Use.*

The Miter square marked E hath (as the Square) an Handle marked *a* one Inch thick, and three Inches

es broad, and a Tongue marked *b* of about the same bredth: the Handle and the Tongue (as the Square) have both their sides parallel to their own sides. The Handle (as the square) hath in the middle of its narrowest side a Mortels in it, of an equal depth the whole length of the Handle: Into this Mortels is fitted one end of the Tongue, but the end of the Handle is first Bereld off to make an Angle of 45 Degrees with its inside. This Tongue is (as the square) Pind and Glewed into the Mortels of the Handle.

It is used for striking a Miter line, as the Square is to strike a square line, By applying the Inside of the Handle to the outside of the Quarter or Batten, you are to work upon: and then by striking a line by the side of the Tongue: For that line shall be a Miter line. And if upon two Battens you strike two such lines, and Saw and Pare them just off in the lines, when the flats of those two sawn ends are applied to one another, the out and inside of the Battens will form themselves into the Figure of a Square.

Thus Picture Frames and looking Glass-frames are commonly made, as by a more full Example you may see in the next Section.

§ 19. *Of the Bevil.*

As the Square is made to strike an Angle of 90 Degrees, and the Miter an Angle of 45 degrees, so the Bevil (marked F) having its Tongue movable upon a Center may be set to strike angles of any greater or lesser numbers of Degrees, according as you open the Tongue wider from, or shut it closer to the Handle. It is used as the Square, and the Miter, and will perform the Offices of them both, though it be not purposely made for either; but for