

A MITRE BLOCK AND HOW TO MAKE IT.

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INDIFFERENTLY known as the mitre trap or mitre block, the useful appliance which forms the subject of the present article is just one of those things which may be made by the user quite as well as by a specialist in tools, if indeed it can be called a tool, for it is rather an aid to the successful use of those things which come under the comprehensive name of tools than one itself. I daresay mitre blocks are to be bought in the

to say that a large proportion of amateur wood-workers have never seen or heard of a mitre block. Anyway, its usefulness is so great to any one who has occasion to form mitres, that no apology is necessary for its mention in these pages. It may be an old-fashioned contrivance, but old or new, anything which can in any way facilitate operations is deserving of attention.

With regard to home-made articles, it will generally be found in every appliance, made by a worker for his own use, that there is some character about it—the maker knows what he wants, and has his own ideas about

how you may make a good useful one of suitable size for ordinary purposes, but do not suppose that any departure from dimensions or even mode of construction will necessarily be a fault. If you are in doubt, or don't know anything about a mitre block, follow the directions as closely as desired, but, of course, incorporate any improvements which may suggest themselves, and if you hit on a good practical idea, pass it on for the benefit of both amateurs and professionals.

As the construction of the mitre block is under consideration at present, its use need only be incidentally alluded to, as those

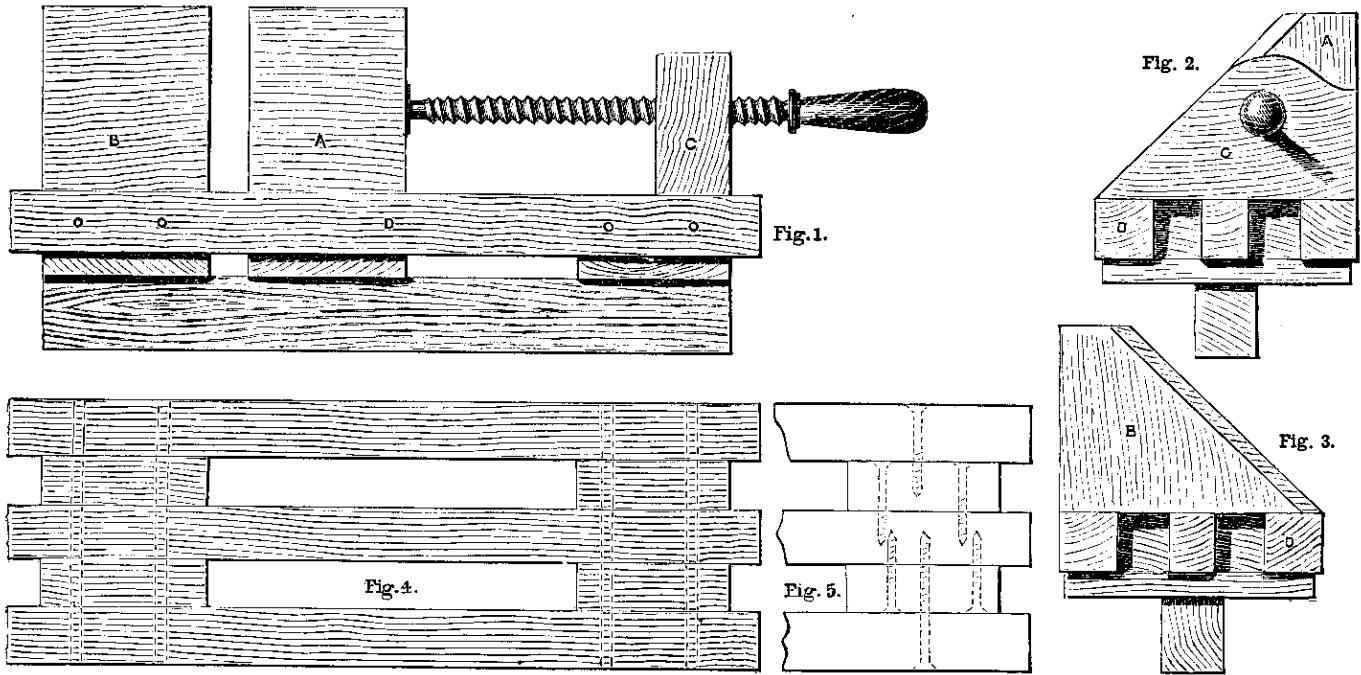


Fig. 1.—Front Elevation of Mitre Block, showing Hand Screw. Fig. 2.—Elevation of Right-hand End. Fig. 3.—Elevation of Left-hand End. Fig. 4.—Plan of Frame. Fig. 5.—Alternative Mode of Fastening Parts of Frame together by Screw Nails.

ordinary way of trade, but they frequently, I may say generally, are made by those who use them. This is not surprising, as any cabinet maker or joiner can make one if he possesses sufficient ability to work accurately in the way of squaring up, etc., and unless he is able to do this he would be a very poor craftsman indeed. Nor will the advanced amateur experience any great difficulty in constructing a mitre trap when it is described to him. He has not the same opportunity of knowing how to make it as his professional *confrère*, for the latter is sure to have at least some shopmate who can lend him one to copy from, or improve on according to his own ideas. The amateur, however, working mostly alone, is to a great extent dependent on other sources for his information, and I don't think it would be too much

its construction. One man thinks one way best, another fancies that some little alteration will render the thing more convenient or serviceable. Hence, in these appliances which are made with a full comprehension of what is wanted, and an equal amount of facility in manipulating the materials of which they are formed, one finds that they are stamped with an individuality which is not, indeed, cannot be, seen in ordinary purchasable tools. Now, I don't wish you, for whom I specially write, to try and find out some feature in the block described, simply with the intention of impressing your own individuality on it, but if you think you can improve on it in any little detail, and so render it more serviceable for your own special class of work, by all means embody your ideas when making up the block. I tell you

what a mitred joint is will require few directions how to use the block when they have made one. Its adaptability for its work will be evident, but in addition to the aid it affords in cutting mitres, or rather in finishing them, it may be said that if made as directed, it will afford a ready means of squaring off ends of pieces, such as door rails and styles. Indeed, to give the thing its full title, one would be justified in describing it as a mitreing and squaring block. The illustrations, Figs. 1, 2, and 3, show the block. Fig. 1 represents it in front elevation, or by merely imagining the ends reversed, as the back, and Figs. 2 and 3 the ends. A and B are two blocks, both precisely alike in size and shape. The one at the left-hand end is fixed to the frame, D, to which the other is so secured, that it can be

moved by the screw working in c. As will be seen from Figs. 2 and 3, one face, *i. e.*, the front of A and B, slopes at an angle of 45 degrees from the top of D, forming the guide for mitreing, while the back is perpendicular to the top of D, or rather to the triplicate bed of which D is a member.

Having said this much on the outline of a mitre block, let us now consider its construction in detail. In describing this, I take the various parts in the order in which I fancy work may be most readily intelligible, for it can easily be understood that in making the block it is of small consequence which part is made first. Before going any further, let it be said that of whatever kind of wood or woods the thing is made, the material must be perfectly dry, so that there may be no subsequent twisting or casting. If the trap is to be of any use it must be accurately made; something near exactitude will not do, so that it is necessary not only to make and fit it correctly, but to use no wood which will not remain true. If there is the slightest suspicion of the wood being damp, place it in some warm place, and let it remain till all moisture has been got rid of, or to borrow a very expressive word from the workshop, till it is almost "baked," before attempting to finish any of the pieces.

Suppose we start with the frame. I should say perhaps that the measurements and other details are described from a block which lies on the table before me. They may therefore be taken as accurate, but minute fractions are not noted. The frame, or bed, is 16 in. long by $5\frac{1}{2}$ in. wide, and is formed as shown in Fig. 4. It is of birch, but any hard wood will do. The two outside pieces are $1\frac{1}{4}$ in. square, the centre piece $1\frac{1}{2}$ in. by 1 in.; the three of them being connected by four other pieces $1\frac{1}{4}$ in. deep by 1 in. thick, and $3\frac{1}{2}$ in. long. It is most essential that the open spaces which form the guides for the movable block, A, should be perfectly true. It would never do to have them wider at one end than the other, or in any way irregular, and, of course, accuracy will depend on both sides of the centre piece being parallel with each other and the inner edges of the outer rails. If these points are attended to, and the pairs of connecting blocks are equally correct, the result must be satisfactory. These parts may be fastened together by glue, and by wooden pegs running through all of them, as shown by the dotted lines on Fig. 4. If this mode be adopted, it will be more convenient to bore the holes in each piece separately before gluing up, their positions being accurately marked. For the pegs, ordinary dowel stuff will do very well. If on fastening the pieces together it should be found that the top and bottom surfaces are not quite level through the holes not being accurately bored, the inequalities may be reduced by planing.

A somewhat easier and simpler method of joining the pieces together, and one which will probably find more favour with most readers, is simply to screw the pieces together as suggested in Fig. 5. The short pieces are first screwed to the centre rail, and then the outer rails to them. The heads of the nails should be well sunk, especially those into the middle piece, in order that they may not interfere with the glue acting properly. Glue alone might do, but I am inclined to think dependence on it would hardly be advisable, especially as the use of a few screws does not entail much trouble. The frame is further braced with two pieces of $\frac{3}{4}$ stuff fastened on underneath. The width of

these is the same as the block, B, which, of course, must be screwed down before the piece at the bottom can be fixed as it is with screws.

The same may be said of the other end piece, but before considering it further, it will be convenient to describe the blocks, A and B. They are of mahogany, faced up on the sloping side with $\frac{1}{2}$ -in. rosewood, which is glued to them. If the work of facing should be objected to, it may be dispensed with, though it is advisable to face with some hard wood, if not absolutely necessary. However, whether faced up with another wood or not, too much care cannot be exercised in making the work true as already stated. The fittings of the sliding block, A, are as follows: Two pieces of equal width and thickness with those connecting the main portion of the frame are screwed to the bottom of A, and work within the open spaces of the frame without either stiffness or side play. They must, of course, be so fixed that the sloping face of A is perfectly level with that of B, for if not, the intention of the mitre block will be frustrated. Another piece of rosewood, the same size as the others, must also be screwed under A, but this time instead of fastening it to the frame, it is fastened to the movable block by screws driven into the sliding pieces. By this arrangement, A is free to move backwards and forwards along the frame, but in no other direction.

We may now proceed to consider the screw and block, c, which, however, hardly call for any special remark. The face of c must be on the same slope as those of the other two blocks, to allow of the plane being used, and, of course, the back must be square. The shape of the top of the screw block is merely rounded off as shown, for the sake of appearance. It may be suggested that so long as hand screws are to be obtained as cheaply as now, there is small reason for incurring the expense of having a special screw and block prepared. That, however, is merely a detail which has not been enlarged on, as the great thing is to have a screw with tapped block. Screwing up will force the block, A, towards B, but unless some arrangement be made it will not draw it back. The simplest and most natural way of causing the screw to pull as well as push, is to have a small plate of metal with a hole in it for an ordinary screw nail to revolve freely in it. The nail is driven into the end of the wooden screw, just as if the plate were being fixed to it, but not tightening it up so much that the plate cannot revolve. This plate is then further screwed to A, as indicated in Fig. 1, when, according to the direction in which the wooden screw is turned, the sliding block is either pushed forward to or drawn away from B, so that anything placed between can be gripped as in a vice.

It will now be seen that on a piece of wood being laid on the upper surface of the bed and held fast between the two blocks, the end can either be trimmed off to form a perfect mitred joint, or squared up as the case may be. It will be understood that the block is merely used for the finishing of the surfaces, as it is not a mitre cutter. Consequently, when using the plane, care must be taken not to injure the block itself by taking any shavings from it. The remaining piece of wood at the bottom, which has not yet been mentioned, is merely for the purpose of allowing the trap to be held by the bench screw when mitres are being worked, and for fastening to the top of the bench by hand screws when the trap is

wanted for squaring purposes. Though simple in construction, few who have much occasion to use one would care to be without it. If properly made on the lines laid down, and properly used, such a mitre trap as described should last a lifetime, though it may be necessary to true the surfaces now and again.