MORTISING MACHINE WORK HOLDING ATTACHMENT TO DRILL PRESS

Howard V. Schwandt, Walla Walla, Wash.

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3 Claims. (Cl. 144—84)

This invention relates to mortising machines, and more particularly to an improved mortising attachment for use with drill presses.

Mortising tools comprising a rotary bit, a rectangular chisel surrounding the bit and a chisel holder have been used in conventional drill presses for cutting openings in the edges of doors, windows, and the like to receive locking or other devices adapted to be mounted in such openings. Where conventional fences or stops are used to position the door or the like to be mortised, the fences or stops must be carefully adjusted to properly align the work with the mortising chisel, so that the mortise cut will be made at the desired location properly spaced from the edges or faces of the work being mortised. This invention provides a simple attachment for drill presses to position and hold the work in the correct alignment for mortising, regardless of the thickness of the work, and regardless of whether the mortise is to be centered or off-centered in the thickness of the work.

It is an object of this invention to provide an improved work-holding attachment for drill presses to properly position and hold work to be mortised or drilled.

It is another object of this invention to provide an attachment of the character described which may be easily mounted on the conventional drill press.

It is another object of this invention to provide a mortising attachment for drill presses which will positively grip and hold work of various thicknesses and automatically align successive work pieces under a mortising tool.

It is a further object of this invention to provide a mortising attachment for drill presses which permits the work to be mortised to be easily mounted in or removed from the press and which securely holds the work while the mortising tool is withdrawn from the work.

It is still another object of this invention to provide for drill presses a mortising attachment which may be easily and economically constructed, and which may be easily swung to one side when it is desired to use the press for conventional drilling operations.

Numerous other objects and advantages of the invention will be readily apparent to those skilled in the art from the following detailed description of a preferred embodiment of the invention illustrated in the accompanying drawings, wherein:

Figure 1 is a side elevational view of a drill press partly cut away and equipped with a mortising attachment having a door positioned therein for mortising.

Figure 2 is an enlarged elevational view of the mortising attachment from the opposite side of the view illustrated in Figure 1.

Figure 3 is an elevational view partly in section of the outer jaw mounting of the mortising attachment shown in Figure 2.

Figure 4 is an elevational view partly in section taken on line 4—4 of Figure 3 and showing in dotted lines the raised position of the outer jaw member.

Referring to Figure 1 of the drawings, for the purposes of illustration, the drill press is provided with a base 10 supporting an upright standard or rigid post 11. The press head 12 is rigidly secured to the top of the post 11 and includes a driving motor 13 geared or belted to the drill spindle 14 in conventional manner. The drill spindle 14 is mounted in the head 12 for vertical movement and a manually-operated lever 15 is provided for shifting the drill spindle 14 downward and upward.

An adjustable work table or work support 16 is provided on the lower portion of the post 11 and may be rigidly clamped to the post at the desired height by means of clamp 17. A suitable work positioning fence or stop 18 may be adjustably secured to the upper surface of support 16.

The drill spindle 14 is provided with a mortising tool when the drill press is to be used for mortising operations, the tool being secured in the usual drill chuck 19 and including a drill bit, not shown, enclosed within a hollow rectangular chisel 20 held by a chisel holder 21, the latter being clamped to a non-rotating sleeve around the drill spindle and movable vertically with the spindle.

The mortising attachment of this invention includes a support member 22 slideable on the post 11 and rigidly clamped at the desired height thereon by a tightening lever 24. Extending horizontally forward from and rigidly secured to the support 22 is a bar or rod 27. One or more rods 27 may be provided, and the rod 27 may be of circular cross-section, as shown in Figure 4, or may be of square or other cross-section. Slidesly supported on the rods 27 are jaw supporting arms 28 to which the downwardly projecting jaw portion 30 is rigidly secured for engagement with the rear side of the work to be mortised. A threaded rod 32 extends horizontally forward from the support 25 to which it is journaled in a thrust bearing 33. The rod 32 is provided with screw threads, the threads of one portion being of opposite pitch to the pitch of the other portion 35, and may be provided with
a central supporting bearing 33a at the forward portion of member 25. The upper portion of one of the arms 28 (Figure 2) is provided with a threaded bushing 36 engaging the threaded portion 34 of rod 32. A hand crank 38 is secured to the rearward end of rod 32 for rotating the same. The outer jaw 31 is pivotally carried by the member 29 which is supported for horizontal adjustment at the projecting portion of one of the bars 27. The downward extending jaw 31 is provided with a collar portion 45 mounted for rotation on a hub 39 projecting from the member 29, and is secured therein by a locked nut or spring washer 40. A spring finger 31 may be secured to the member 29 by a bolt 42, and is provided at its outer free end with a ball 43 which engages suitable recesses 44 in the periphery of the collar portion 45 of jaw 31. The jaw 31 may thus be turned or swung on the hub 39 from the downward position as shown in Figures 1, 3, and 4 to a horizontal position 31 indicated in dotted lines in Figure 4 to permit the work to be easily inserted in or withdrawn from the attachment. The spring detent 43 serves to hold the jaw 31 in either position.

The upper portion of member 28 is provided with a threaded bushing 31 extending therethrough, there being a set screw 35 provided to lock the bushing 31 to member 29. An adjusting wheel 37a is provided on the outer end of bushing 31 to permit the bushing to be conveniently turned after the set screw 35 is loosened. A work engaging member 46 is adjustably secured to the outer face of the bracket 25 and is provided with one or more fingers 47 projecting horizontally forward over the upper edge of the work 48 to prevent the latter from being lifted off the support 18 when the mortising chisel 20 is withdrawn from the work.

The operation of the mortising attachment will now be described. The work support 16 is positioned on the post 11 so that when the lower edge of the work to be mortised, such as the door 48 shown in Figure 1, is positioned on the stop or fence 18, the upper edge of the door will be below the upper position of the mortising chisel 20. The attachment support member 25 is rigidly secured to the post 11 so that the rod 27 and the threaded rod 32 are above the door edge to be mortised and the upper edge of the work 48. The jaw 31 may be swung up to the horizontal position while the work 48 is placed in position, and may then be turned downward to the position illustrated in Figure 1. The hand crank 38 is then turned to rotate the threaded rod 32 to slide the members 29 and 25 toward each other along the supporting rod 27 by means of the right-hand and left-hand threads 34 and 35. As the jaws 30 and 31 are moved toward each other, they grip the sides of the work 48 and automatically align the upper edge of the work under the mortising chisel 20. The threads 34 and 35 being of equal pitch in opposite directions, the work 48 is always properly clamped and aligned under the mortising tool. The lever 15 is operated to advance the mortising tool 20 into the work and after the mortise is cut, the tool is withdrawn by the same lever. The fingers 47 of the member 46 prevent the work from being raised when the tool is withdrawn. The crank 38 is then turned to release the jaws 28 and 29 from the work 48. If jaw 31 is turned to its upper position shown in dotted lines in Figure 4, the work may be easily removed from the press. The next work piece may then be inserted in the press for mortising. Where the mortise to be cut is not to be centered in the thickness of the work 48, the member 29 may be adjusted along the rod 32 by loosening the set screw 38 and then turning the wheel 37a. The set screw 35 is then tightened and the attachment is ready for properly aligning successive work pieces for mortising.

It will be apparent from the mortising attachment serves to quickly align and hold successive work pieces to be mortised. No separate adjustments need be made for mortising successive pieces of different thickness since the attachment correctly aligns each work piece regardless of its thickness. The pivotally mounted jaw 31 permits work to be quickly placed in or removed from the mortising position. This feature is of great advantage where a press provided with the illustrated attachment is used in building construction work at the building site. Doors and other pieces of various sizes and thicknesses may be quickly mortised in minimum time. While the attachment illustrated herein has been described for use in mortising operations only, it will be readily apparent that its use is not restricted to mortising, and that it will be equally advantageous in drilling or other operations performed by drill presses, where it is desired to quickly position and clamp the work to be drilled or cut. Where it is required that the cutting operation be effected not at the center of the edge thickness of the work piece, the wheel 37a may be adjusted to offset the work from being centered under the tool. It is also to be understood that various constructions other than the spring detent 43 may be provided for holding the pivoted jaw 31 in the upper and lower positions. By loosening the lever 15, the support 25 carrying the entire mortising attachment may be swung to one side to clear the drill press for conventional drilling operations.

Obviously many other variations in the nature and arrangement of the various elements illustrated and described will be readily evident to those skilled in this art, and this invention contemplates any such equivalent structures within the scope of the following claims.

1. A mortising attachment for positioning and holding work to be mortised in a drill press, comprising in combination, a support secured to a rigid portion of said drill press, a rod secured to and extending horizontally forward from said support over the top edge of work to be mortised, a jaw-supporting member slideable on said rod, a clamping jaw carried by said member and depending below the axis of said horizontal rod, a second jaw-supporting member slideable on said rod, a clamping jaw pivotally carried by said second member, and adjustable threaded means engaging both of said jaw-supporting members for sliding said clamping jaws into each other simultaneously into engagement with the sides of work below said horizontal rod, said pivotally carried depending jaw being swingable on a horizontal axis to a position above the top edge of the work to facilitate the entry and removal of work to and from the work.

2. A mortising attachment as set forth in claim 1, said support having a clamping member secured to and extending horizontally forward from said support below the horizontal axis of said rod for engagement with the upper edge of the work while the work may be easily removed from the press.

3. A mortising attachment as set forth in claim 1, said second jaw-supporting member being provided with a rotatable bushing threaded to said
threaded means for adjusting the relative spacing of the slidable jaws with respect to said support.

HOWARD V. SCHWANDT.

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