A. A. HARVIE.

MORTISING AND CENTERING DEVICE.

APPLICATION FILED JAN. 17, 1910.

992,500.

Patented May 16, 1911.

2 SHEETS—SHEET 1.

Fig. 2.

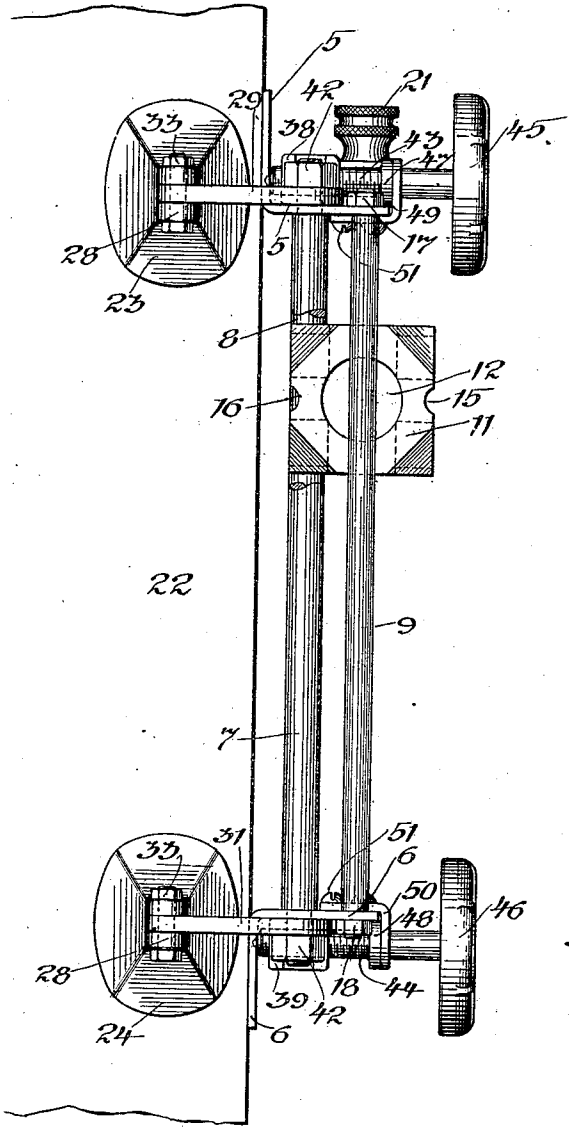
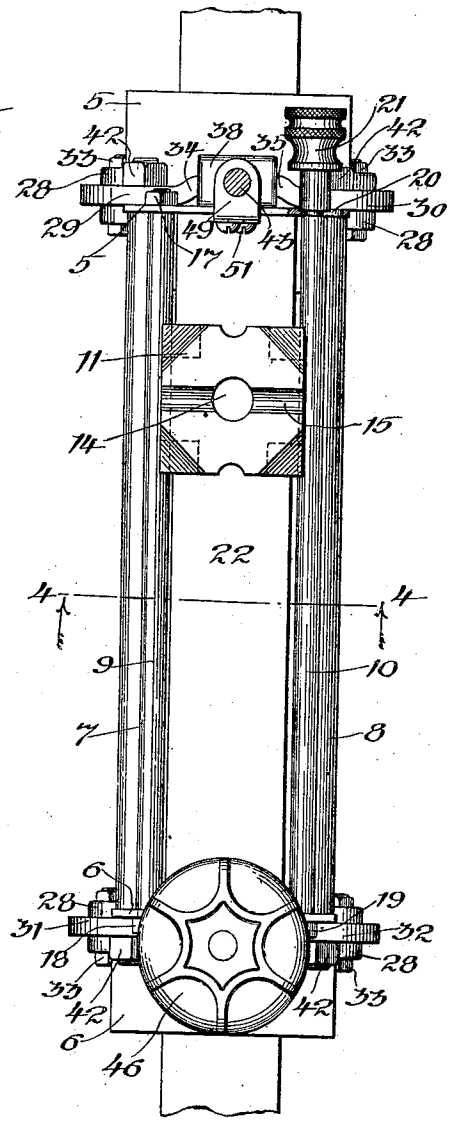


Fig. 1.



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2 SHEETS—SHEET 2.

Fig. 3.

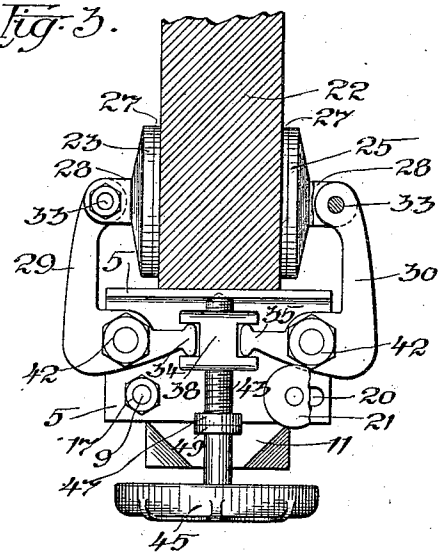


Fig. 5.

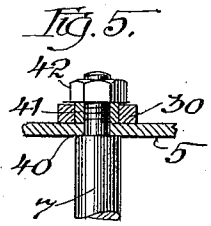
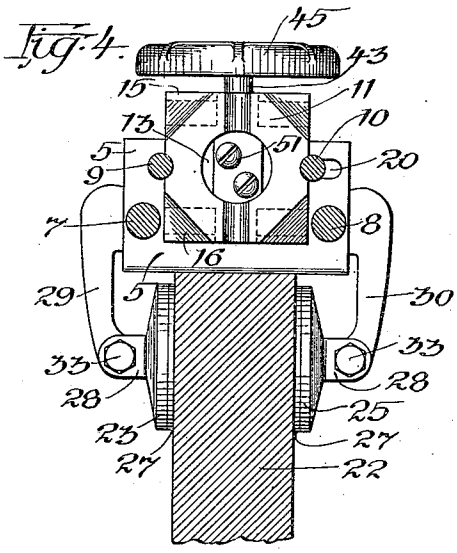


Fig. 4.



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UNITED STATES PATENT OFFICE.

ALBERT A. HARVIE, OF OTTUMWA, IOWA.

MORTISING AND CENTERING DEVICE.

992,500. Specification of Letters Patent. Patented May 16, 1911.

Application filed January 17, 1910. Serial No. 538,423.

To all whom it may concern:

Be it known that I, ALBERT A. HARVIE, a citizen of the United States, residing at Ottumwa, in the county of Wapello and State of Iowa, have invented certain new and useful Improvements in Mortising and Centering Devices, of which the following is a specification.

This invention relates to a device, particularly intended for use in centering bits or drills for drilling holes in the edge of a comparatively thin board or object, such as a door, when it is necessary that the holes be drilled centrally therein. Such centrally drilled holes are generally necessary when starting the recesses into which locks are to be set, or when starting the mortise holes into which tenons are to be fitted, and they are used in many other places than those enumerated.

At present it is customary, in drilling such holes as above, to locate them by measurement, and no guide is provided for insuring that they shall enter the wood perpendicularly to its surface.

The prime objects of this invention are to provide a novel and efficient means for guiding the bit or drill so that it shall strike the wood centrally of its surface, and perpendicular thereto; a device which shall enable the drilling of holes at points some distance apart in the edge of the surface and in the central line thereof without the necessity of removing or readjusting the device on the door, or other object; one which shall enable the use of bits or drills of several diameters by a simple change in the device, and without the necessity of employing bushings or other means which are liable to become loosened and dropped from the device, although such bushings if preferred, may be used; a device which may be used on the edges of doors or other objects of varying degrees of thickness, but which shall be so arranged that the bits or drills shall always enter the wood surface centrally thereof; a device which may be quickly and easily attached to, or detached from the door or other object without any danger of marring it, but which, when once attached, shall be in all ways secure for the purpose for which it is to be used; and in other ways and manners to accomplish other and desirable objects and ends not hereinbefore described. And the device consists in the features of construction and combination of parts hereinafter described and claimed.

In the drawings, Figure 1 is a front elevation of my improved device, showing it attached to a door or board, preparatory for use, showing the upper clamping screw cut off so as to remove the upper clamping knob, to better show the devices behind it, and showing one edge of the horizontal leg of the upper angle plate cut away so as to reveal the slot in which one end of one of the centering block guide rods may be moved for purposes of removing or inserting the centering block; Fig. 2 a side elevation of the device attached to a door or board, and having one of the frame rods cut away so as better to show the centering block behind it; Fig. 3, a top view of the device attached to a door or board, showing a portion of the lug on one of the clamping plates cut away, and showing a portion of the thumb-screw on the movable guide rod cut away so as to show the slot in the angle plate beneath it; Fig. 4, a view which would be had on looking upward from the line 4—4 of Fig. 1, if the upper clamping knob were not removed, and if the horizontal leg of the upper angle plate were not cut away; and Fig. 5 a detail showing the preferred manner of connecting one end of one of the frame rods to one of the angle plates, so as at the same time to serve as a fulcrum for one of the levers.

In the figures the frame of the mortiser comprises upper and lower angle plates 5 and 6 respectively, or their equivalents, suitably connected as by frame rods 7 and 8. The rods 7 and 8 are each connected at one end to the angle plate 5 and at the other end to the angle plate 6. I will described the peferred manner of forming these connections in a later part of this specification. Guide rods 9 and 10 are also connected to the angle plates 5 and 6. These guide rods serve as guides for a centering block 11, which is adapted to slide up and down when guided by them. To enable the use of bits or drills of three different sizes with the same centering block without the need of employing bushings, I prefer to form three holes 12, 13 and 14 through the several directions of the centering block so that when it is properly inserted between the guide rods 9 and 10 the proper sized hole will be in position to receive the bit or drill. To this end, also, the several faces of the center-

ing block are provided with grooves, as 15 and 16, which are adapted to receive the sides of the guide rods so that the block may move freely between the guide rods.

One of the guide rods, as 9, may be solidly attached to both of the angle plates 5 and 6, as by nuts 17 and 18 threaded on to its ends. The other guide rod 10 is preferably adapted to move freely in a slot 20 of the other angle plate when a thumb screw as 21, is loosened sufficiently. The slot 20 may be provided at its inner end with a slight enlargement so that when the rod 10 has been moved inwardly to the full extent, the thumb-screw 21, when tightly screwed down, will engage the enlargement of the slot, thereby holding the rod 10 securely in its innermost position.

It is seen that by means of the arrangement of guide rods just described, the centering block can be quickly and easily removed and reinserted, so that it will present a different hole for receiving the bit or drill; and that when the centering block has once been inserted it cannot be removed from the guide rods, except by releasing the thumb screw 21, springing the rod 10 outwardly from the rod 9 and sliding the centering block to the upper portion of the guides. The arrangement is one of extreme simplicity, but one which will maintain the centering block always properly centered with respect to the mortiser no matter where it may be placed with respect to the guide rods.

The mortiser is adapted to be held solidly and accurately to a door or board 22 by means of clamping plates 23, 24, 25 and 26 (26 not shown), each preferably lined on its contacting face with some yieldable substance, such as a felt padding 27. Each clamping carries a lug or other connecting means, as 28, adapted to receive the end of a lever, as 29, 30, 31 and 32, and be pivotally secured thereto by a bolt of any other suitable means, as 33. The levers 29, 30, 31 and 32 may terminate respectively in lugs or contacting ends 34, 35, 36 and 37 (36 and 37 not shown), adapted to engage with sockets, as 38 and 39, so that when the sockets 38 and 39 are forced inwardly or outwardly the levers will be caused to rotate about suitably pivotal points or fulcrums the detailed construction of the preferred form of which I will now describe.

The rods 7 and 8 are each preferably provided at each end with a shoulder, as 40 (see Fig. 5), which may abut against the horizontal leg of one of the angle plates, as 5, the rod passing through the angle plate, and being threaded on its end portion. A sleeve or collar, as 41, is adapted to fit over the protruding portion of the rod, and the lever, as 30, is provided with a hole of such size that it may fit easily down over the collar 41. The collar 41 is of a height such that when a nut, as 42, is threaded on the end of the rod and screwed, solidly down against the collar, thereby firmly embracing the angle plate 5, between the collar 41, and the shoulder 40, the lever, as 30, may still rotate freely about the collar 41 as a fulcrum. In this manner the nuts 42 serve not only to firmly secure the angle plates 5 and 6 to the rods 7 and 8 but they also serve to hold the levers 29, 30, 31 and 32 in place; and the ends of the rods 7 and 8 carry the collars 41, which in turn serve as fulcrums for the levers.

The sockets 38 and 39 may be drilled and threaded to receive screw rods, as 43 and 44. These screw rods are preferably adapted to abut against the vertical arms of the angle plates so that when the screw rods are rotated they will force the sockets 38 and 39 away from the vertical arms, thereby carrying out also the contacting ends or lugs of the levers. This will cause the levers to be rotated in such a way that the clamping plates will be forced toward each other, thereby clamping firmly the door or board 22, which may be placed between them. And it is evident also that by properly proportioning the levers the clamping plates will move toward each other during the clamping process in such a way that the mortiser will always be maintained with its centering block central with respect to the door or board, no matter what the thickness thereof.

For the purpose of rotating the screw rods 43 and 44, I prefer to attach to them the knobs 45 and 46. I also prefer to form the screw rods with shoulders 47 and 48 for abutment against journal plates 49 and 50, which may be as shown in the form of angles secured to the angle plates of the frame of the device by means of screws or rivets, as 51.

It is seen that my device is one which may be used for attachment to a door or board, whose thickness may be of any amount within the possible range of the device, and that no matter what the thickness of the door the centering block will always be brought centrally with respect to the edge of it by reason of the manner in which the levers which carry the clamping plates operate. Also that several sizes of bits or drills can be used with the same centering block without the necessity of employing bushings of any kind, but that by the use of bushings a larger number of bits or drills could be used with the same centering block. Furthermore, that the centering block may be easily and quickly removed and reinserted by merely loosening a thumb-screw, pressing a rod to one side in the slot and raising the centering block to that end of the mortiser and removing it.

Although I have shown a centering block in which the several holes are formed through the different directions thereof,

still it is evident that by using a centering block of sufficient size several holes of different diameters could be formed through one direction of it. Also that the centering block may be slid up and down between the guide rods to any desired location for drilling the hole, so that for most practical purposes, when the extreme limits of the recess or mortise hole have been determined, the mortiser may be clamped onto the door or board and without the necessity of removing it therefrom all of the necessary holes may be drilled.

In operation the vertical arms of the angle plates of the frame should be brought squarely against the edge of the door or board so as to insure that the bit or drill when inserted in the proper hole of the centering block will enter the wood perpendicularly to its surface.

Although I have shown and described a construction in which the levers are pivoted on the ends of rods, which form a part of the frame of the device, still it is evident that it is not necessary to do so as the levers may be pivoted in any suitable manner. Also I have shown a device in which the screw rods exert pressures on the ends of the levers by contacting the vertical arms of the angle plates of the frame work. It is evident, however, that any suitable device may be used for causing the levers to rotate, thereby forcing the clamping plates against the door or board. Or in fact any suitable means may be used for causing the clamping plates to approach each other in such a way that they will always clamp the door or board so as to bring the centering block centrally with respect to the edge thereof. Also I have shown means for removing the centering block after loosening a thumb-screw at one end of one of the guide rods. Evidently, however, any other means may be used for accomplishing the purpose of inserting or removing the centering block although the preferred form is that shown.

I claim:

1. In a device of the class described, a framework comprising upper and lower angle plates and rods connecting the same and clamping plates suitably pivoted to said angle plates, and means for clamping said clamping plates centrally with respect to the angle plates, vertical guide rods between the angle plates and a centering block between the guide rods, one of the angle plates having therein a slot and one of the guide rods being passed through said slot, and means for securing said guide rod in the slot, substantially as described.

2. In a device of the class described, a framework comprising upper and lower angle plates, and rods connecting the same, arms suitably pivoted to the rods, and clamping plates pivoted to the arms, means for rotating the arms in a manner to bring the clamping plates equidistant from a point central with respect to the framework, vertical guide rods in the framework, and a centering block between the guide rods, the guide rods being supported in a manner to bring the centering block centrally with respect to the framework, substantially as described.

3. In a device of the class described, the combination of a framework, a stationary guide rod, a second guide rod movably attached to the framework and means for clamping the framework to the edge of the door or board, with a centering block carried by the guide rods and of substantially cubical form and provided through its different directions with a plurality of bit holes of different diameters and further provided in its faces with guide grooves of a size to engage the guide rods in a manner whereby when the block has been inserted between the guide rods to bring opposite grooves into engagement with them the block is supported with a bit hole perpendicular to the edge of the door or board, substantially as described.

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