Nov. 23, 1926. 1,607,597

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BUTT MORTISE GAUGE

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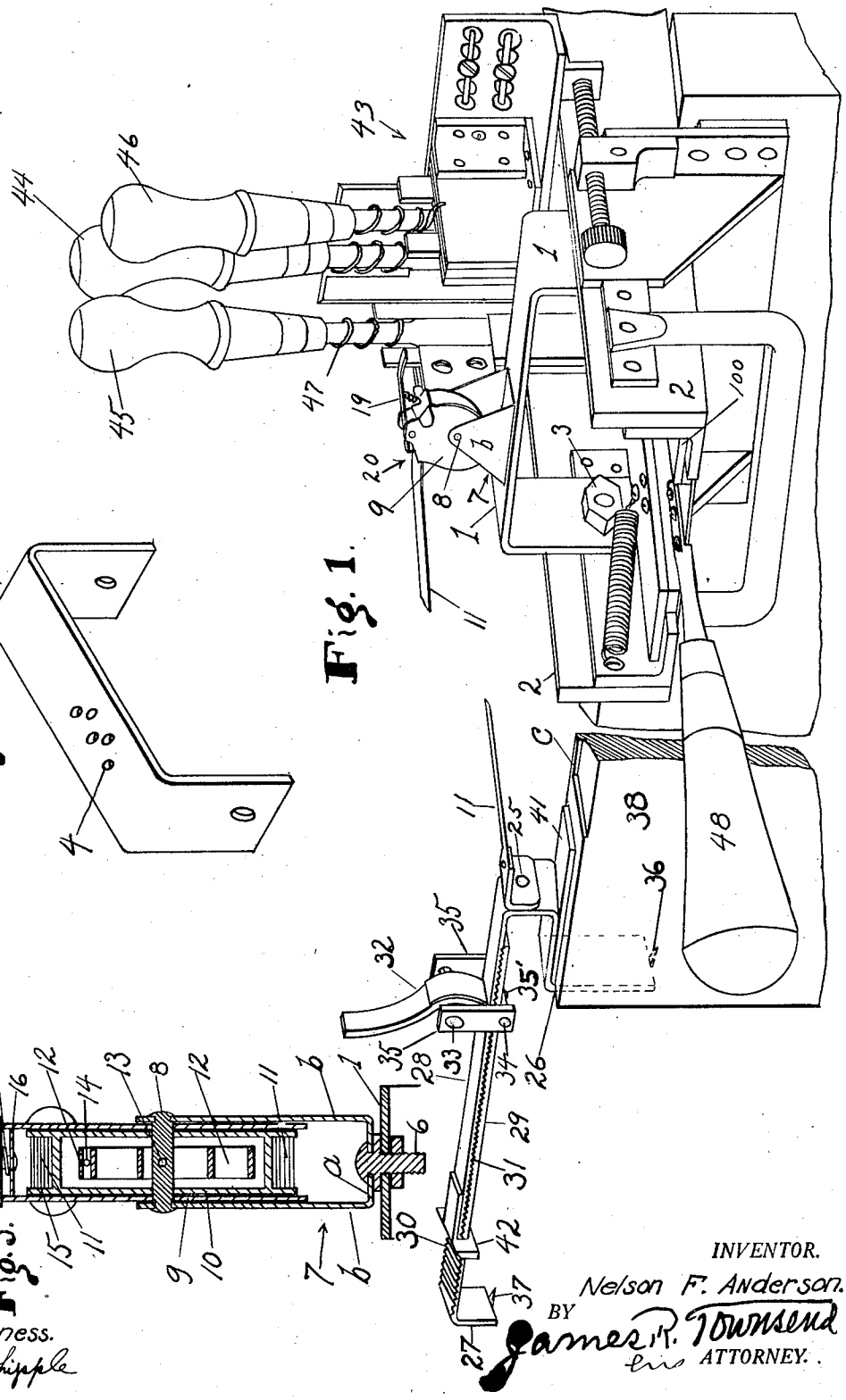


Fig. 1.

Fig. 2.

Fig. 3.

Witness.
L. Whipple

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Fig. 8.

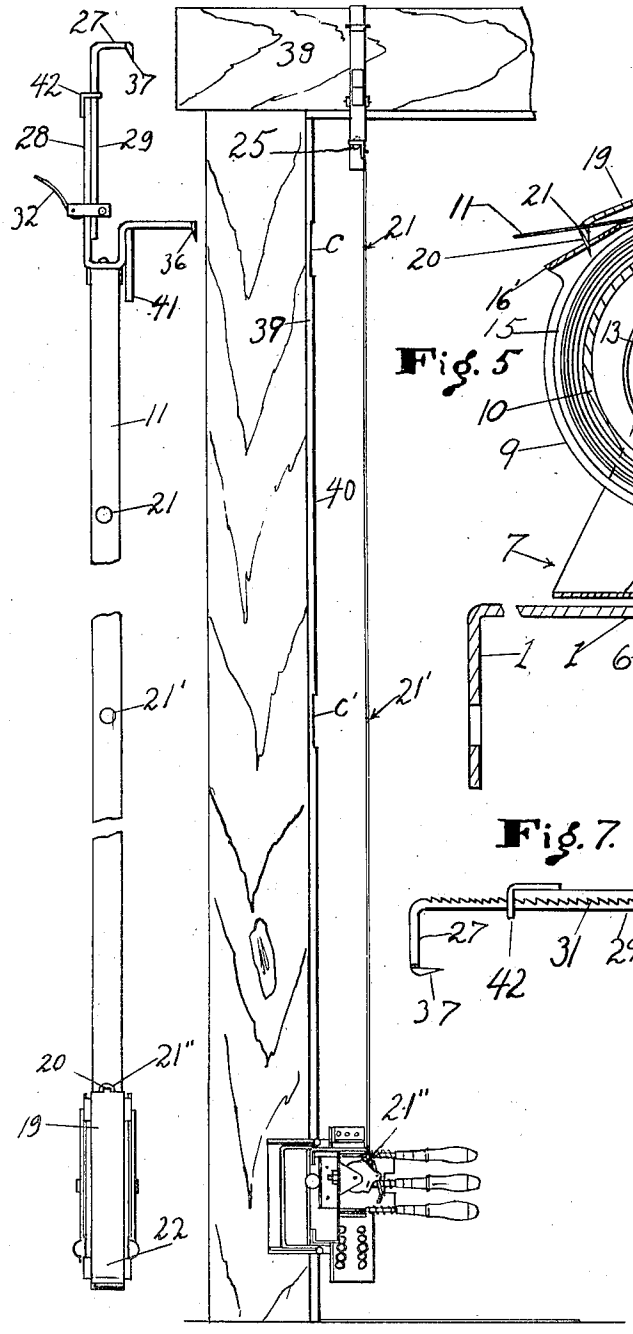


Fig. 6.

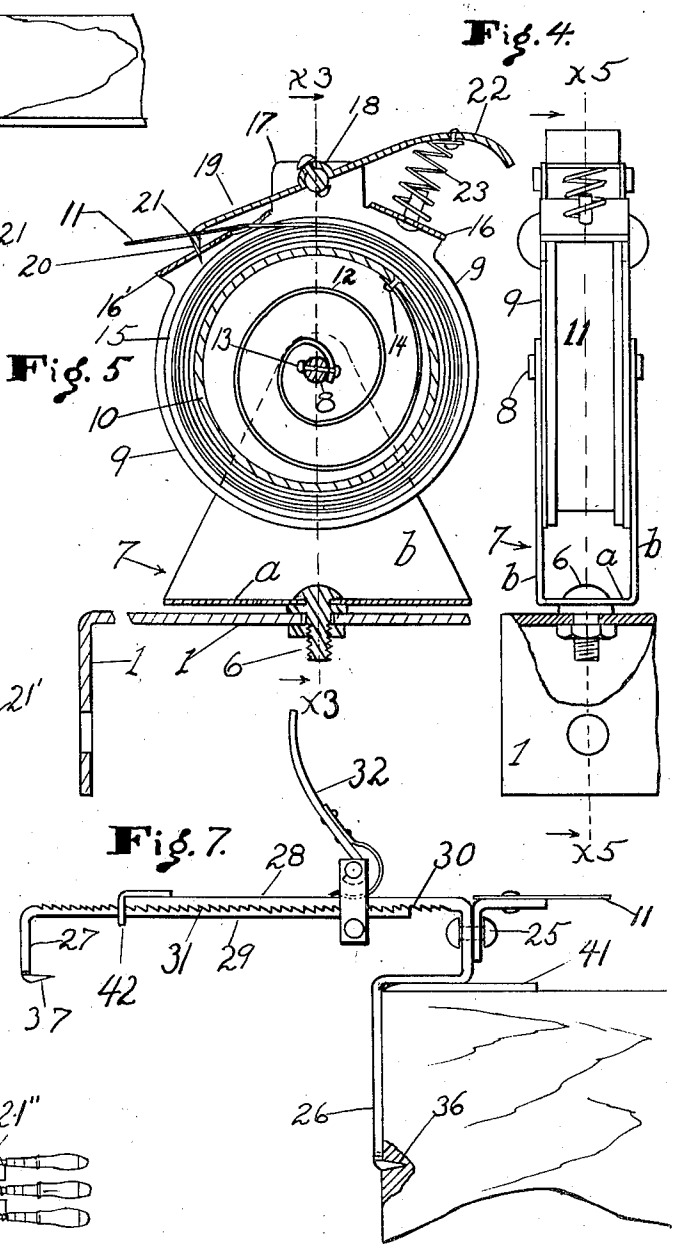


Fig. 4.

Fig. 5

Fig. 7.

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UNITED STATES PATENT OFFICE.

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BUTT-MORTISE GAUGE.

Application filed December 9, 1920. Serial No. 429,392.

An object of this invention is to provide means whereby a machine for making door butt mortises may be applied to the exact position required on the door jamb and on the door, so that by operating the machine in the adjusted positions respectively, the gains or mortises to receive the butts will be exactly positioned so that when the butts are fixed therein and the door is hung, the butts on the door will register with those on the jamb to receive the pintle and to allow the door to fit the opening.

The invention is of course applicable to transoms and French windows and the like, wherever butt hinges are used.

Economy of time, accuracy of cutting the mortises, and speed of adjustment, are further objects.

The invention may be applicable to various forms of mortise machines, but is more particularly adapted for use with the machine for making door butt mortises which is set forth in my application Serial No. 373,436, filed April 12, 1920, in which there is a frame provided with rails and a cross piece to engage adjacent faces of the piece to be mortised; means to clamp the piece against the cross piece; guides for cutters, said guides being adjustable along the rails; a cross plate fixed to one of said guides; cutters for said guides and means adjustably fixing the other guide to said cross plate; and in the present invention, I apply to the mortising machine frame, one end of a spacing connection; and to the other end of said connection, means adapted to engage the piece to be mortised; and I provide means whereby the length of said connection between said engaging devices and said mortising machine frame, may be adjusted.

I also provide an adjustable combination attachment adapted at one application to engage the head casing or the like, for application of the machine, to cut the mortise in the door jamb at top, bottom or middle, or wherever the hinges are to be placed; and to also, at another application, gauge the position of the mortising machine on the door or other shutter which is to be hinged to said jamb.

An advantage gained by this invention is that by the use of a simple attachment to my said mortising machine, an unskilled workman is enabled to make perfect mortises for the butts in less time than a skilled workman, and can do the work quicker than a skilled workman can mark out the places in which the mortises are to be cut.

Other objects are ease of adjustment to properly locate the mortising machine; ease of shifting from door to door-frame and vice versa; and ease and rapidity of shifting from top to bottom gain or mortise of jamb or door; and vice versa.

Butt mortises are cut in door jambs before the door stops are fixed to such jambs and the invention comprises an attaching means adapted for alternative attachment to complementary pieces or parts, such as a door frame and a door jamb, for the purpose of so locating a mortising machine on such pieces or parts successively, that upon operating the machine in its several locations mortises will be properly located on said pieces so as to accommodate the butts for hanging the door.

Other objects, advantages and features of my invention may appear from the accompanying drawings, the subjoined detail description and the appended claims.

The accompanying drawings illustrate the invention.

Figure 1 is a fragmental isometric view of my newly invented appliance connected to my said mortising machine mounted on a door and in position for cutting the second gain or mortise on the edge thereof.

Fig. 2 is an isometric view of the arch or support by which the gauge mount is connected to the frame of the machine.

Fig. 3 is a vertical axial sectional view of the swivel attachment and take-up.

Fig. 4 is an elevation of the swivel attachment and take-up from the right of Figs. 3 and 5.

Fig. 5 is an enlarged view of the swivel attachment and take-up in section on line x^5, Fig. 4.

Fig. 6 is an elevation showing the gauge attached to a door frame with said mortising machine in position for mortising the lower mortises in the door jam.

Fig. 7 is a side elevation of the combined door and door jamb gauge on the end of the door, a fragment of which is shown in the position shown in Fig. 1.

Fig. 8 is a fragmental detached face view showing the spacer, the take-up and the gauge on a scale larger than that of Fig. 6.

The support 1 is adapted to be connected to the cutter carrying frame 2 by any suit-

able means as rivets or bolts 3, and is provided with one or more pivot holes 4 which are shown as being five in number staggered for various adjustments of the pivot 6 which pivots the swivel 7 to the support 1.

Said swivel is shown as formed of a plate of sheet metal bent into U-form, and comprising the base *a* and the upright standards *b*, *b* which form a support for the shaft 8 that is fixed by riveting the shaft against rotation relative to the standard. The take-up housing 9 and the reel 10 within said housing are journalled to revolve upon said fixed shaft 8. The connection or spacer 11 may be of various constructions but is shown in the drawings as a steel tape fixed at one end to the drum or reel 10 and wound thereon by a spring 12 which is coiled around the shaft 8 and fixed thereto at one end as by the pin 13; the other end of the spring 12 being fixed to the drum, as by the rivet 14.

Said drum is shown provided with end flanges 15 to hold the steel tape in place when wound and unwound on the reel. Said housing 9 is provided with cross bars 16, 16′ and ears 17. The ears 17 form bearings in which a pin 18 is mounted to support a latch 19 having at one end a detent 20 to catch in a hole 21 in the connection 11. Said latch is provided with a finger piece 22 acted upon by spring 23, to hold the detent 20 in engagement with the connection 11. Said spring is supported by the cross bar 16 of the housing.

Said connection 11 is provided with other holes at different points as at 21, 21′, 21″, into which the detent 20 can be inserted by spring 23 acting on latch 19. To the free end of the connection 11, there is swiveled by a swivel pin 25, a gauge comprising the relatively adjustable door engaging and frame engaging members 26, 27, that are relatively adjustable by means of the extension arms 28, 29 having juxtaposed friction faces 30, 31 which are clamped together by a clamp comprising a cam lever 32 journaled to cross bar 33 of a clamp frame which is formed of cross bars 33, 34 and sides 35, and fixed to the extension arm 29 by rivet 35′ through cross bar 34. Said clamp is adapted to hold said extension arms 28, 29 in fixed relation to each other at any point of adjustment desired.

The engaging members 26, 27 are respectively provided with teeth 36, 37 adapted to engage the door or other piece 38 or the head casing 39 as the case may be at different applications of the gauge for cutting the mortises *c* in said door 38, or the jamb 40.

The spacer 11 is swiveled to the arm 28 and adjustably connected to the arm 29 to hold the engaging members in true relation.

The arm 28 is provided with a foot 41 to rest on the piece 38 to be mortised so as to prevent disadjustment when connected to the piece to be mortised.

Then the clamp lever 32 is operated to clamp the extension arms 28, 29 together. The end of the extension arm 28 is held in slidable relation to the adjusting arm 29 by the sleeve 42 which is fixed to the arm 28 and slides along the arm 29 as the adjustment is made.

The engaging member 26 is adapted to engage either the end of the door or the underside of the head casing and its thickness is adapted to gauge the clearance between the top of the door and the underside of the head casing when the door is hung on its hinges.

In practical use, to cut the butt mortises in the jamb, the member 27 will be hooked over the top of the head casing and the member 26 will be brought up against the underside of the head casing. Then the detent 20 will be inserted into the uppermost hole 21, thus bringing the mortising machine 43 into position for cutting the top mortise *c*, then the back wall chisel 44 will be driven down to the gauge, not shown, and then either of the end cutters 45, 46 will be driven down likewise.

The springs 47 return the cutters 44, 45 and 46 to normal position shown in Fig. 1, and then the cutter 48 will be driven to gauge, thus completing the mortise *c*, then the detent at 20 will be released and the machine will be lowered to the next hole at 21′ for cutting the next mortise as at *c*′ and the same operation will be performed as just described. Then the detent at 20 will be released and the machine lowered until the detent engages the hole 21″ for the bottom mortise *c*″.

Then the clamp 32 is released and the attachment is removed from the head casing, and then the latch 19 will be released and the take-up spring 12 will take up the tap 11 until the detent 20 comes to the hole 21 in which it is allowed to enter. Then the engaging member 26 is brought against the top end of the door and the tooth 36 is driven home, thus bringing the machine into position to cut the top mortise *c*. Then the cutters are driven as before, and then the latch is released, the machine brought to the middle position and the operation again performed as stated, then the latch is released and the machine brought to the lower position for cutting the lower mortise on the door, then the latch is released and the spring tape is taken up by the spring 12 and the engaging member 26 is released from the door and the machine is ready for use on the next jamb.

The spring is preferably of sufficient strength to normally hold the attaching device against the housing of the take-up.

It is understood that more holes may be

provided in the tape than are shown in the drawings in case a larger number of butt mortises are to be made in pieces.

My said machine is adjustable to cut different size mortises and it is necessary that the measurements be made on the complementary pieces such as the jamb and the door, according to the length of the butts; and in order that the corresponding mortises on the complementary pieces shall register, it is necessary that the measurements from the ends of the pieces, as the end of the door or the top of the jamb, must be made to the middle of each mortise; and the variation of this middle point for the different length of butts is not very great; that is to say the middle of a 4½ inch butt is 2¼ inches from one end and the middle of a 2½ inch butt is 1¼ inches from the end, and butts are commonly made in sizes 2½, 3, 3½, 4 and 4½ inches long. Although larger and smaller butts are available on the market, I have shown the attachment arranged for only the usual sizes, from 4½ to 2½ inches length of butt, and the adjustment to the different length of butt is made whenever the machine is supplied with cutters to suit a different length of butt.

By providing the five staggered holes 4 shown in Fig. 2, it is possible to make all of these different adjustments by simply placing the pivot 6 into the particular one of the holes 4 which is appropriate to the particular length of butt for which the mortise is to be cut.

Since the attaching means must hook over the head casing when the mortising machine is applied to the jamb, and must hook over the end of the door when the machine is applied to a door, the attaching means must be turned quarter way round in making the change from one to the other. The swivel pivot 25 allows this to occur.

To mortise the jamb, and then mortise the door or vice versa requires the machine to be turned half way round. Such turn is accommodated by the pivot 6 being located mid-way between the ends of the cutter 100 on the machine; and this necessitates the slight adjustment which is permitted for the different length butts, by the staggered holes 4.

The small amount of adjustment required necessitates staggering the holes 4 in order to give sufficient strength of metal between said holes, to withstand the strain, without undue thickness of the metal strap which forms the support 1.

I claim.

1. In combination with a mortising machine; a spacer connected at one end to the mortising machine; and attaching means at the other end of said spacer adapted for alternative attachment to complementary parts for the purpose of supporting said mortising machine and for spacing said mortising machine therealong so that mortising of said parts will be in conformity with each other.

2. In combination with a mortising machine; a flexible spacer connected at one end to the mortising machine; and an attaching device connected to the other end of said spacer and adapted to be alternatively attached to a door casing and a door for the purpose of supporting said mortising machine and for correspondingly locating the mortising machine at predetermined positions on the door jamb and on the door which is to be hinged to such jamb.

3. In combination with a door butt mortising machine; a spacer and an attaching device swivelly connected to said spacer and provided with two arms, one being adapted to hook over a head casing and the other being adapted to hook over the end of the door, for the purpose respectively, of locating the mortising machine at predetermined positions on the door jamb and on the door, successively for the purpose of making mortises on jamb and door register with each other.

4. In combination with a door butt mortising machine; a spacer and an attaching device connected to said spacer and provided with two arms, one being adapted to hook over a head casing and the other being adapted to hook over the end of the door for the purpose, respectively, of locating the mortising machine at predetermined positions on the door jamb and on the door, successively, for the purpose of making mortises on jamb and door register with each other; the member applicable to the door being adapted to engage the under side of the head jamb when the device is applied for mortising the upright jamb.

5. In combination with a mortising machine; a spacer connected to the mortising machine and an attaching device connected to the spacer and adapted to be alternatively attached to the head casing of a door and the end of the door; and means whereby the space between the attaching device and the mortising machine can be adjustably determined.

6. The combination with a mortising machine having a frame, of a flexible connection; means connected to the frame of the mortising machine and adapted to take up said connection, and attaching means connected to said connection and adapted to engage a piece to be mortised for the purpose of locating the mortising machine on such piece.

7. An attachment for mortising machines comprising a reel, means for swiveling the reel to the frame of a mortising machine, a tape wound on said reel, a take-up spring to operate the reel to wind up the tape;

means to hold the tape at different take-up positions and means connected to the tape for attaching the tape to the piece to be mortised.

8. An attachment for mortising machines comprising a take-up reel, means for connecting the reel to the frame of a mortising machine, a tape wound on said reel and provided with holes; means carried by the reel to engage said holes to hold the tape at different take-up positions, and means connected to the tape for attaching the tape to the piece to be mortised.

9. In a butt mortise gauge; a spacer comprising a tape; means to connect said spacer to a mortising machine adapted to different lengths of butts; said means comprising a mounting for the tape, said mounting being provided with a pin; means to wind up said tape and a support for said mounting adapted to connect said mounting with the frame of the mortising machine, said support being provided with holes for said pin, and said holes being located with reference to the middle of the mortise cutter of the mortising machine.

10. The combination with a mortising machine having a frame; of a flexible connection; take-up means to connect said connection to the frame of the mortising machine; means connected to said connection adapted to be attached to a door casing and a door and comprising extension arms provided with engaging members; said members being adjustable relative to each other; and means adapted to hold said members in adjusted positions.

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 30th day of November, 1920.

NELSON F. ANDERSON.