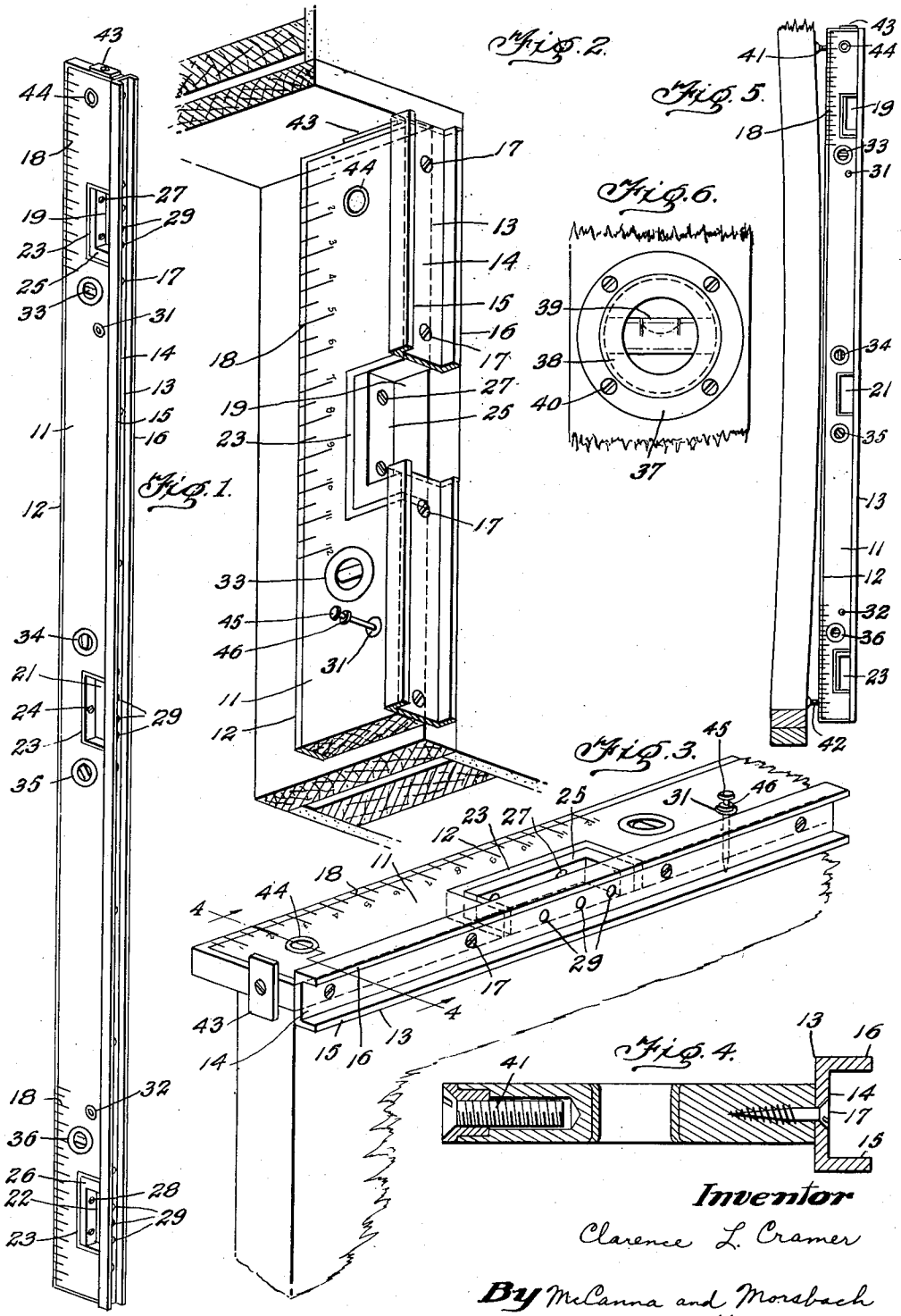
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TOOL FOR HANGING DOORS

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TOOL FOR HANGING DOORS

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This invention relates to tools for hanging doors of the type suspended on butt hinges and more particularly for locating the hinge butt and scribbing the location of same on doors and door jambs.

The proper hanging of door has in the past required a workman of considerable skill and has required considerable time in its proper accomplishment because of the cut and try methods previously employed. One reason for this has been the lack of suitable tools to enable the various operations to be performed in a uniform manner and without the necessity for handling a plurality of conventional tools. In order to insure that the door when hung will swing properly, care needs be exercised in mounting the butts so that the pintles should be exactly perpendicular. This has required that the door be fitted directly on the door jamb and has required considerable laborious handling of the door to fit it into the opening and properly attach the hinge butts.

The primary object of the invention is the provision of a tool so constructed as to enable an artisan to scribe the proper position and location of hinge butts on the door and door jamb in an accurate manner without the necessity of other tools and in such manner that mere mounting of the butts in the scribed locations and insertion of the hinge pintles results in a properly hung door.

A further object of the invention is the provision in a single purpose tool of a structure embodying the function of a plurality of tools combined in such manner as to simplify the operations of properly locating the hinge butts of a door and render the operation more precise for the purpose of expediting the operation to enable the doors to be interchangeable, and to permit the hinge butts to be applied to the door in a location remote from the door jamb on which it is to be carried.

Other objects and advantages will appear from the following description and the accompanying drawings, in which:

Figure 1 is a perspective view of a tool constructed in accordance with the invention;

Fig. 2 is a fragmentary perspective view showing the tool in place against a door jamb;

Fig. 3 is a fragmentary perspective view showing the tool in place on a door;

Fig. 4 is a cross-section of the tool taken on the line 4—4 of Fig. 3;

Fig. 5 shows the manner in which the tool is employed to determine the plumb line on a door jamb or the like, and

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Fig. 6 is a fragmentary elevation showing the manner in which the level tube is attached to the tool.

The embodiment of the invention herein shown includes a body 11 preferably though not necessarily formed of wood of suitable thickness to withstand the required service. I have found that half-inch thickness is adequate for normal requirements. Attached to one edge of the body and extending over the ends thereof is a metal binding strip 12. This binding strip preferably comprises a single piece of metal bent at two points intermediate its ends to extend across the ends of the body. The strip should be of substantially the same width as the thickness of the body 11, in this instance approximately one-half inch. Fastened to the opposite edge of the body 11 is a facing strip indicated generally by the numeral 13 preferably formed of metal, and in this instance comprising a channel shaped member having a base 14 and upstanding side edges 15 and 16. The facing strip is attached to the edge of the body by means of a plurality of wood screws such as shown at 17 passing through the base 14 and into the edge of the body 11. The base 14 of the facing strip should have a width sufficient to extend approximately one-quarter inch beyond the plane of the opposite sides of the body 11, as best shown in Fig. 3, which serves a purpose presently to be described. The height of the walls 15 and 16 is not material except that it should be sufficient to render the structure rigid and withstand service conditions normal to such a tool.

The length of the body 11 is such that the overall length of the tool including the binding strips at the end of the body shall be exactly six feet. The body and the binding strip 12 are graduated as indicated at 18 adjacent each end of the body for a distance of twelve inches from the end.

Disposed along the edge of the body 11 adjacent the facing strip 13 are a plurality of indexing or scribing slots at least two in number and preferably three, these slots being indicated by the numerals 19, 21 and 22. The slot openings are each lined with a metal facing as shown at 23 which is secured in place by a flush type screw 24. The inner dimensions of the liners 23 correspond to the outer dimensions of the slot necessary to be scribed for the reception of a butt for a four-inch hinge. The slots 19 and 22, in addition to the liners 23 are provided with reducer blocks indicated at 25 and 26 which are secured in position by flush type screws 27 and 28, the base 14 of the facing strip having openings as

indicated at 29 for the passage of the shaft of a screw driver for inserting and removing these screws. The inner dimensions of the reducer blocks 25 and 26 are such as to correspond with the external dimensions of the slot to be cut for a hinge having a three and one-half inch butt. The slot 19 is located a distance from the end of the tool corresponding to the conventional distance from the top of a door to the upper hinge and the spacing between the slots 19, 21 and 22 corresponds to the conventional spacing between the hinges of the heavier type doors commonly suspended from three hinges. The inserts or reducers 25 and 26 are so positioned in the slots 19 and 22 as to give the proper hinge spacing on lighter doors of the type commonly suspended on two three and one-half inch butt hinges.

Spaced along the length of the body 11 are metal grommets as shown at 31 and 32 which pass completely through the body and have a central opening adapted for the reception of nails for the purpose of tacking the tool in operative position against the edge of a door or door jamb. The body is also provided with one or more openings adapted to receive a level tube indicated at 33. In the present embodiment the tool is provided with four of these openings indicated at 33, 34, 35 and 36. A conventional spirit level tube such as shown in Fig. 6 is inserted in each of these openings, the tube conveniently being of the type commonly found on the market and comprising a metal flange 37 carrying a ring 38 in which is supported a bubble tube 39 of conventional form, the ring 38 being adjustable within the ring 37. The ring 37 is attached to the side of the body by means of screws such as the screws 40. The level tubes indicated at 33 and 36 are disposed with the tube extending at right angles to the binding strip 12, which forms a straight edge for the tube, the level tube 34 is disposed with the tube in parallelism with the binding strip 12 and the level tube 35 is disposed with the tube at an angle of approximately 45 degrees with respect to the binding strip.

In order to determine the matter of plumb in certain types of irregularities on door jambs a pair of screws indicated at 41 and 42 are threaded into the tool through the binding strip 12 adjacent opposite ends thereof and are adapted to be screwed out from the binding strip for the purpose of spacing one or both ends of the tool from the work to bring the tool into a plumb position.

A combination spacer and abutment member indicated by the numeral 43 is attached to the upper end of the body 11 beyond the binding strip and is held thereto by means of a flush type screw. This spacer is attached adjacent its mid-point and is capable of rotation with respect to the body so as to project laterally out from the body when the tool is mounted on a door as shown in Fig. 3 but may also be rotated so as to lie within a plane defined by the side walls of the body 11 so as to be out of the way and yet serve as a spacer when the tool is applied to the door jamb as shown in Fig. 2. The tool may suitably have an opening as shown at 44 adjacent one end thereof preferably lined with a metal grommet to permit hanging the tool in storage.

In using the tool the artisan may elect to start either by installing the butts on the door or on the door jamb. Assuming the former, the user rotates the stop 43 to the position shown in Fig. 3 and rests one face of the tool on the edge of the door to which the hinges are to be applied. The tool is pressed laterally until the edge of the facing strip 13 abuts against the face of the door toward which the door is to swing. At this point double-headed nails such as shown at 45 are inserted through the grommets 31 and 32 and the nail driven into the edge of the door until the inner head 46 abuts against the face of the tool. This securely positions the tool on the edge of the door. Thereafter the user scribes a line about the inner edge of the slots 19, 21 and 22 or such of the slots as may be required. If a door having three and one-half inch hinges is being hung the inserts 25 and 26 remain in position as shown in Figs. 1 and 3 and the slots 19 and 22 are employed. The outline of the recess for receiving the butt may be scribed either with a pencil, awl or the like, or may be cut in by means of a chisel to define a line marking the perimeter of the recess. It will be observed that in this single operation, by means of the tool, the user has simultaneously located the butt in its proper relationship with the upper end of the door and with respect to the face of the door and has properly determined the relationship between the two butts. The nails 45 are thereafter withdrawn from the edge of the door, a tool is removed and the butts are recessed into the edge face of the door flush with the surface, thereby completing the installation of the hinge on the edge of the door.

Prior to starting the installation the operator will have checked the dimensions of the door jamb and this is easily accomplished by placing one end of the tool on the floor and noting the point at the upper end of the tool which will be precisely six feet from the floor. By elevating the tool upward into the position shown in Fig. 2 he can then readily note the additional distance. This is accomplished by the fact that the tool is made six feet in length and an additional foot scale is scribed on the upper end of the tool, this additional foot normally compensating for the shortage and indicating the distance in excess of six feet, since doors now commonly in use range from six to seven feet. The straight edge 12 of the tool is then applied to the inner face and to the edge of the door jamb to check the same for plumb. If the jamb is thus found to be plumb, the stop 43 is rotated back to the position shown in Figure 1 and the tool is placed with the body 11 in face to face engagement with the jamb of the door to which the hinges are to be applied. The tool is moved until the edge of the jamb engages against the facing strip 13 as shown in Fig. 2 and the tool is moved upwardly until the spacer 43 engages against the upper face of the door jamb. At this point the nails 45 are driven into the wood of the jamb supporting the tool in scribing position. With the tool in this position the location of the hinge butts is scribed against the door jamb in the manner previously described. While the tool occupies this position a line is drawn on the edge of the door jamb along one side of the facing strip which defines the plane to be occupied by the inner edge of the door trim when it is subsequently applied to the doorway. The nails 45 are thereafter removed, the tool removed from the jamb and the butt of the hinge recessed into the face of the jamb as indicated by the scribing. With the butts positioned in this manner the door may be slid into position against the door jamb, the pintles inserted and the door will be found to be properly hung.

When irregularities are found in the door jamb the tool enables the difficulties to be overcome with a minimum of trouble. For example, when the tool is placed in the position shown in Fig. 2 the level tube **33** may show that the door jamb is out of plumb. In this event it may be necessary to move the upper or the lower end of the tool outwardly in such manner as to space one end of the facing strip somewhat away from the edge of the door jamb in order to bring the tool to a plub position. However, when brought to this position the tool can be tacked in place, the butts scribed and the door hung unless the jamb is so badly out of plumb that the hinges cannot be reasonably well situated on the jamb. However, when the butts are placed on the door jamb in this manner, it will be found, when the door is placed upon its hinges, that the door will properly swing and will be supported on a vertical axis.

It will be noted that the tool is of rigid construction and requires no adjustment for the spacing of the hinges once the size of the hinge butt has been decided upon so that a carpenter using the device does not have to measure a number of separate distances to obtain the desired results with the possibility of error in one or more of the spacings. By the use of this tool it is possible for one operator to lay out and mount the hinge butts on the door frames in a building where a great many door frames are to be hinged, and for a second operator to attach the hinge butts to the doors in some remote space in the building for convenience in light or warmth or before the doors are actually delivered to the job. Under these circumstances much time and expense can be saved by allocating the work between operators performing the same and to produce a standardized construction in which the doors are interchangeable throughout the building.

In the foregoing, the body member **11** has been described as made of light wood. It is understood that the tool may equally well be made of aluminum, magnesium or some other light durable metal which may be formed into the general shape shown in the drawings and described herein. However, when the tool is made of metal, the binding strips **12** and **23** will not be needed, and the grommets **31**, **32** and **44** will not be needed as the metallic body can withstand the wear caused by common usage of the tool.

I claim:

1. A tool for hanging butt hinge doors, in combination a continuously rigid body member having indexing openings therein spaced for standard settings for butt hinges, said index openings being of a size and shape to define the locations of butt hinges on doors and door jambs, a channel strip of greater width than the thickness of said body member attached to one edge of said body member to form guide shoulders along said body member and said channel strip serving to locate said body member in place on a door or door frame.

2. A tool for hanging butt hinge doors, in combination a continuously rigid relatively flat body member having permanently set indexing openings therein for outlining seats for hinge butts on doors and door jambs, a reinforcing channel strip attached to one edge of said body member throughout its length and having greater width than the thickness of said body member presenting continuous shoulders along said body, spirit levels carried by said body member readable from different elevations from the opposite ends thereof and means for securing said body in place while scribing said door or door jamb through said indexing openings.

3. A tool for hanging butt hinge doors, in combination, a light wood body member extending beyond the standard spacings for hinge butts on a door or door jamb, a reinforcing binding strip along the back edge and ends thereof, a reinforcing channel facing strip along the front edge thereof, said binding strip and facing strip forming a protective frame about said body member, said body member having indexing openings formed therein in fixed relation to one end thereof for locating seats for hinge butts on a door or door jamb, and a clip carried by one end of said body member serving as a spacer in a door jamb or a stop on a door for properly locating said indexing openings.

4. A combination straight edge and tool for hanging butt hinge doors, in combination a rigid body member extending beyond the standard spacings for hinge butts on a door or in a door jamb, said body having fixed indexing openings therein for locating seats for hinge butts on a door or in a door jamb, a continuously smooth binding strip along the back edge of said body member presenting a straight edge for laying out work, a reinforcing channel strip having greater width than the thickness of said body member attached to the front edge of said body member, said channel strip presenting continuous shoulders along said body member for locating said body member, and said body member having graduated indicia along the opposite faces of the rear edges thereof adjacent the ends for indexing hinge seats beyond the range of said body member.

5. A tool for hanging butt hinge doors, in combination, a rigid body member extending beyond the standard spacings for hinge butts on doors and in door jambs, said body member having fixed indexing openings therein for locating seats for hinge butts on doors and in door jambs, a reinforcing channel strip along the forward edge of said body member extending beyond the faces of said body member to present continuous shoulders along said body member, a straight edge formed on said body member parallel to said channel strip, spirit levels carried by said body member designating vertical, horizontal or angular juxtaposition of said straight edge and channel strip, and extensible screws from the back edge of said body member utilizing remote points in checking the status of a working surface.

6. A tool for hanging butt hinge doors, in combination, a rigid body member extending beyond standard spacings for hinge butts on doors and door jambs, said body member having fixed indexing openings therein in definitely spaced relation to an end of said body member, a reinforcing channel strip along one edge of said body member forming continuous shoulders along the opposite faces of said body member, and inserts attachable in said indexing openings for locating seats for smaller size hinge butts.

7. A tool for hanging butt hinge doors, in combination, a rigid body member extending beyond standard spacings for hinge butts on doors and door jambs, said body member having fixed indexing openings therein in definitely spaced relation to an end of said body member, a reinforcing channel strip along one edge of said body member forming continuous locating shoulders along the opposite faces of said body member, and

a spacer pivotally carried by the normal upper end of said body member interposed between said body member and a door frame in one position and forming a limit stop when said body member is applied to a door.

8. A tool for hanging butt hinge doors, in combination, a rigid body member extending beyond standard spacings for hinge butts on doors and door jambs, said body member having fixed indexing openings therein for locating seats for hinge butts, said indexing openings being usable from either face of said body member, a reinforcing channel strip secured to one edge of said body member forming continuous locating shoulders along each face of said body member, a straight edge along the opposite edge of said body member parallel to said channel strip, spirit levels carried by said body member for indicating a true vertical setting and means for attaching said body member temporarily to a door or door frame in correct position while using said indexing openings.

9. A tool for hanging butt hinge doors, in combination, a rigid body member extending beyond standard spacings for hinge butts on doors and door jambs, said body member having fixed indexing openings therein for locating seats for hinge butts, said indexing openings having definitely spaced relations to the normal upper end of said body member, said indexing openings being usable from either face of said body member, a reinforcing channel strip attached to one edge of said body member presenting a continuous shoulder along each opposite face of said body member, a continuously smooth binding strip along the opposite edge of said body member parallel to said channel strip and forming a straight edge for the length of said body member, graduated indicia along the opposite faces at the opposite ends of said body member for measurement beyond the length of said body member, spirit levels carried by said body member indicating vertical, or horizontal, or angular juxtaposition of said straight edge, a spacer carried by the upper end of said body member providing clearance for a swinging door in a door frame, and grommets in said body member to receive temporary fastening means for said body member while said indexing openings are being used.

10. A tool for hanging butt hinge doors, in combination, a rigid body member extending beyond standard spacings for hinge butts on doors and door jambs, said body member having fixed indexing openings therein for locating seats for hinge butts, said indexing openings being definitely spaced to an end of said body member and usable from either face of said body member, a strip along one edge of said body member presenting continuous shoulders along the opposite faces of said body member, a spacer pivotally carried by one end of said body member locating said indexing openings a definite spacing from a header of a door frame in one position and forming a limit stop locating said indexing openings a different spacing on a door in another position, and fastening means for temporarily holding said body member in either of its two applied positions while using said indexing openings.

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