

[54] METHOD AND APPARATUS FOR CUTTING DOORS

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[58] Field of Search 33/194, 174 G

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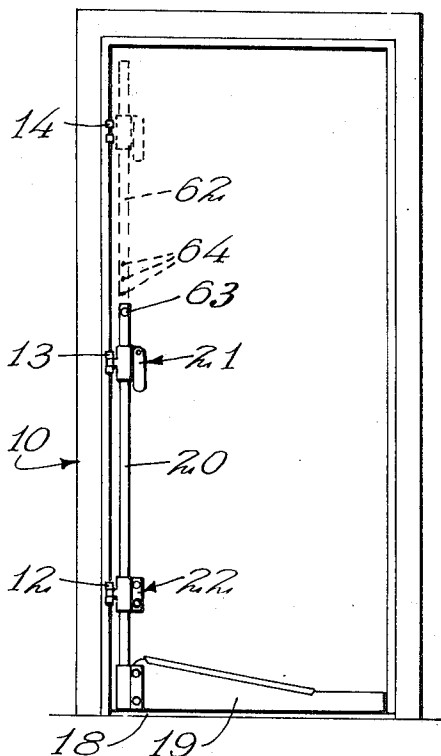
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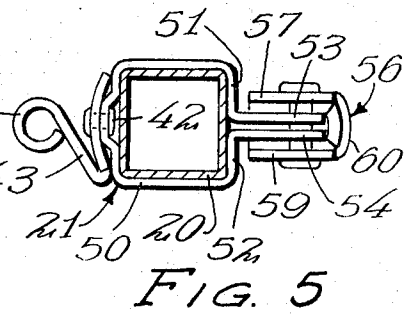
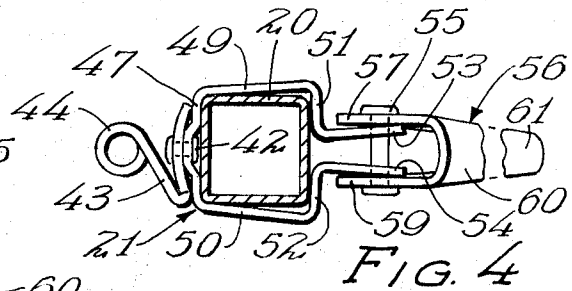
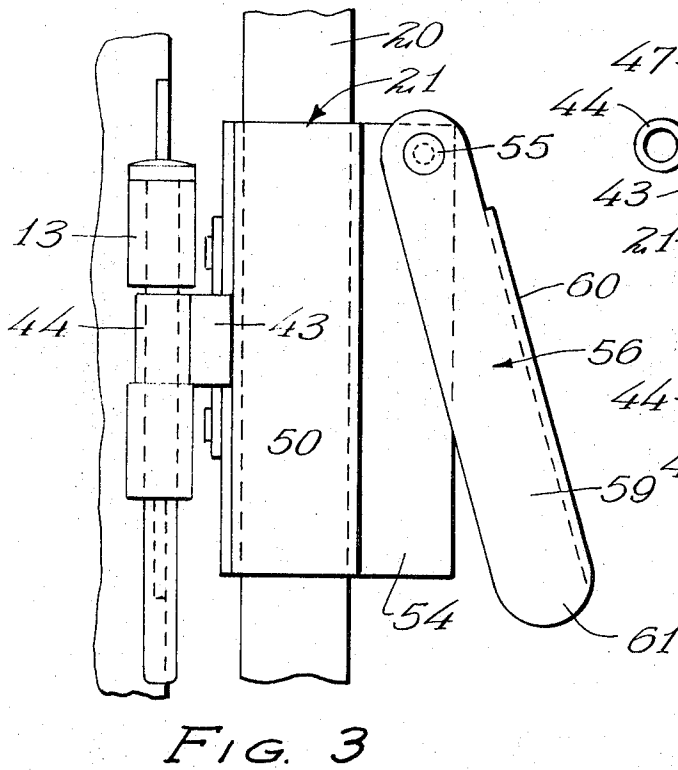
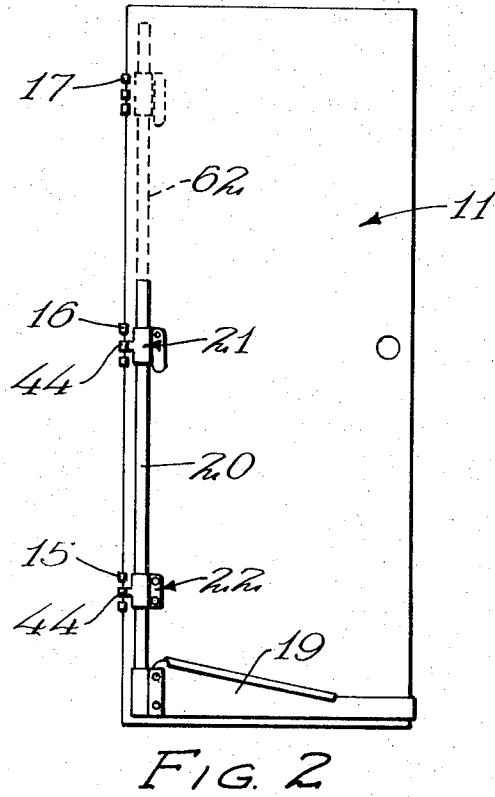
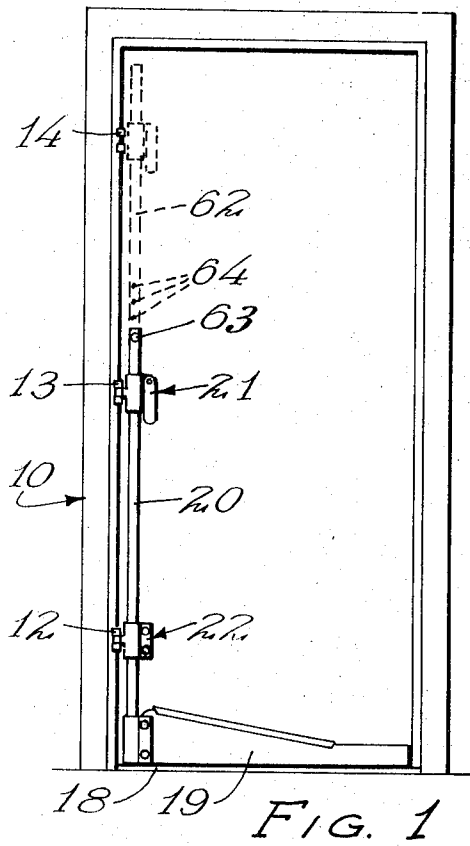
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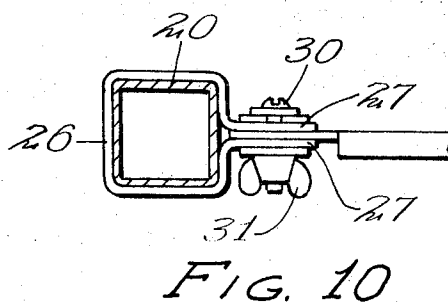
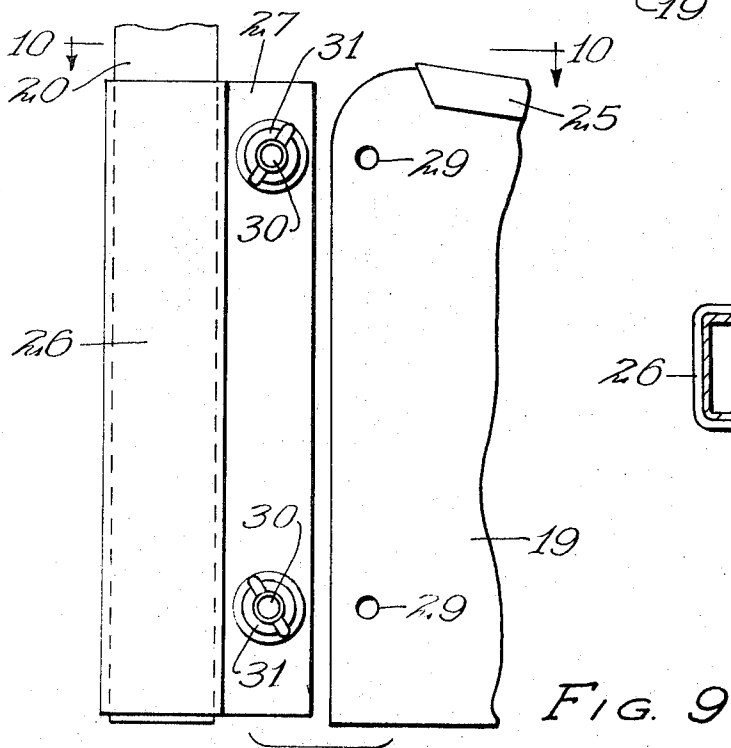
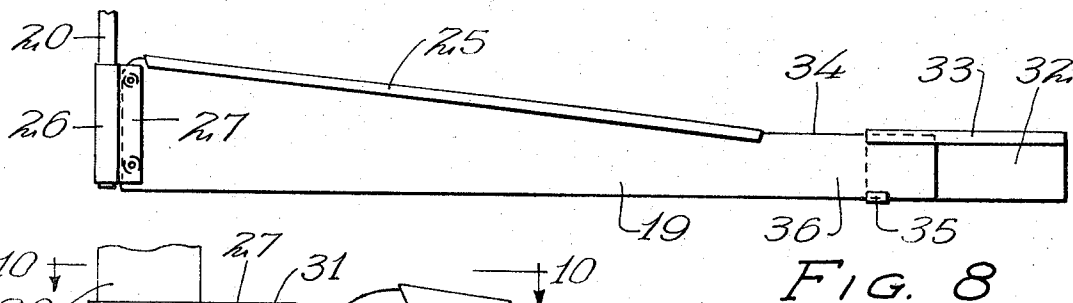
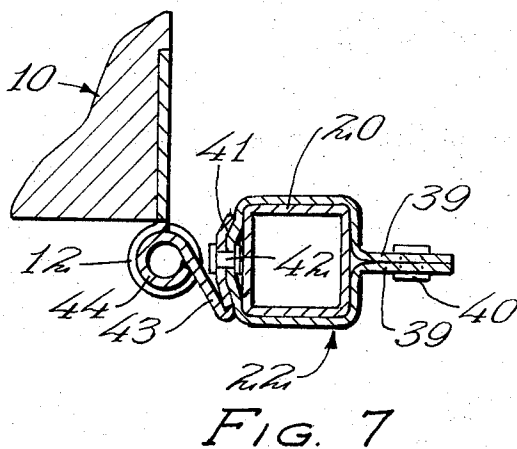
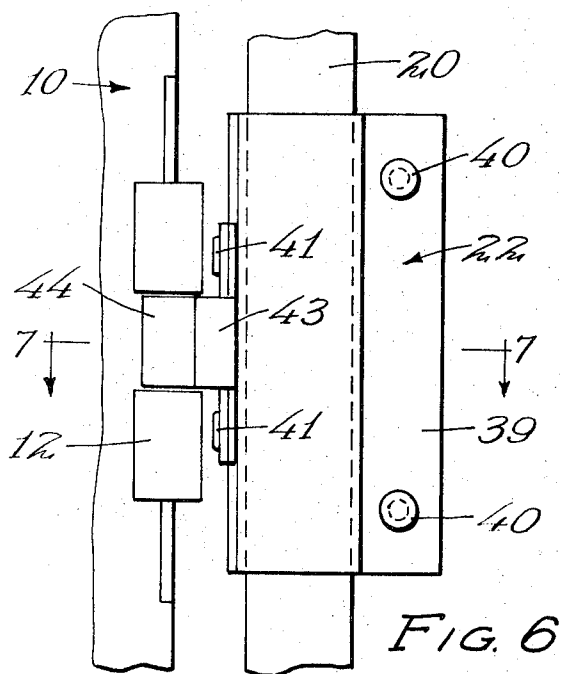
ABSTRACT

An apparatus for use in marking doors for cutting is provided, usually used for shortening previously hung doors to swing freely over newly applied carpeting and the like. The door is removed, and an upright is suspended from the fixed hinge portions on the door frame, and adjusted until a horizontal template at the bottom of the standard swings freely over the carpeting. The standard is placed on the door and the door marked along the template to indicate where the door is to be cut.

9 Claims, 12 Drawing Figures







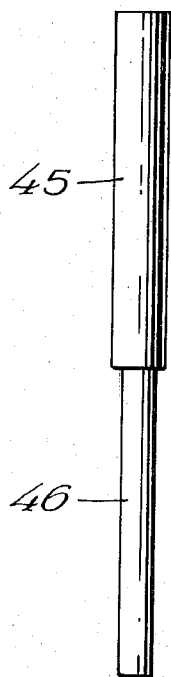


FIG. 11

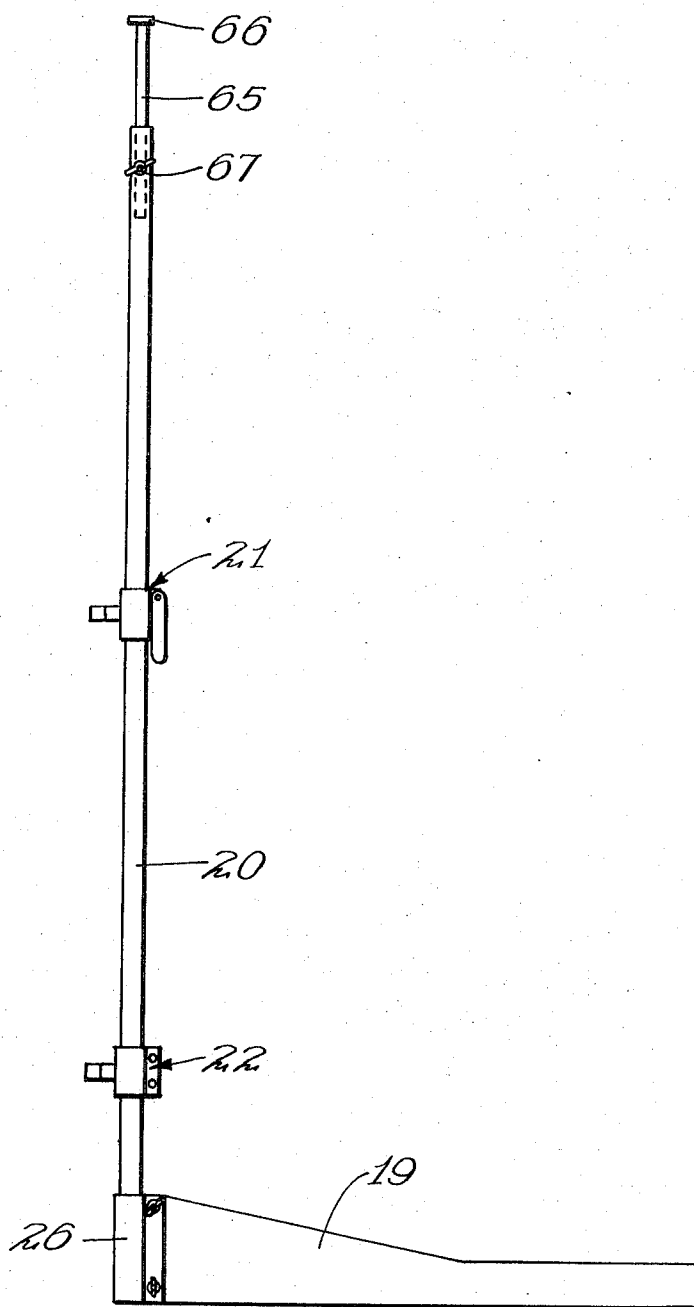


FIG. 12

METHOD AND APPARATUS FOR CUTTING DOORS

This invention relates to an improvement in method and apparatus for cutting doors and deals particularly with a device useful in cutting the lower edges of doors so that they will swing freely over carpeting, rugs and the like.

BACKGROUND OF THE INVENTION

Difficulty is experienced in cutting doors so that they will swing readily over carpeting, rugs and the like. Doors are often mounted in their frames prior to the time carpeting is laid and in many such instances, it is necessary to cut off the lower edge of the door in order to clear the carpeting or rugs which are positioned near the door. The door cutting operation is often a matter of trial and error due to the fact that the frame to which the door is hinged is not always in exactly right angular relation to the floor on which the carpet is laid. Obviously, it would be a simple matter to merely cut off a sufficient portion of the door so that it will unquestionably clear the carpets or rugs. However, this often leaves a readily visible gap between the lower edge of the door and the door sill when the door is closed. Accordingly, it is common practice to cut from the lower edge of the door a small strip which may be adequate to permit the swinging of the door. If the door will not swing properly, an additional portion of the lower edge is cut off. This is continued until the door will swing over the carpet or rug, and produce the minimum gap between the lower edge of the door and the door sill when the door is closed.

Cutting small increments of wood from the lower edge of the door may be a difficult procedure due to the fact that the amount removed is narrow, and it is difficult to saw a very narrow section from the lower edge of the door along a straight line. When doors were made of solid boards with or without inserted panelling, the task was simple as the lower edge of the door could be merely planed to the proper length. However, most doors now constructed have surfaces of wood veneer or the like applied to opposite surfaces of a door body usually made of a combination of natural and synthetic materials. Thus the ends of the door usually cannot be neatly planed or sawed to the proper length in order to readily pivot over carpets or rugs.

SUMMARY OF THE INVENTION

I have found that much of the difficulty can be avoided through the use of a simple apparatus which I have devised. Say, for example, that the doors have been hung, carpet or rugs are installed, and the lower edge of the door engages or scrapes along the carpet or rug as it is pivoted. In order to determine the amount the door must be cut off in order to swing properly, the door is removed by removing the hinge pins, and a standard is pivotally attached to the fixed portions of the hinges. The standard is vertically adjustable relative to the brackets mounted thereon and adapted to engage in the fixed hinges. The standard is provided at its lower end with an arm having a lower surface which is at right angles to the axis of pivot of the standard. By mounting the standard on the hinges in place of the door, the right angular lower edge of the arm may be adjusted in elevation until it may swing over the carpet or rug surface. The standard may then be removed from the door

frame and rested upon the door, the hinge portions of the standard being arranged in proper relation to the hinge portions mounted upon the door. The lower edge of the standard will then extend across the door at the proper elevation where the door will be cut off in order to clear the carpet, rug or other obstruction. The door may then be marked and cut off. The door may then be replaced in the hinges, and the lower edge will clear the carpet, rug or other obstruction in the same manner as the previously supported arm cleared such an object.

These and other objects and novel features of the present invention will be more clearly and fully set forth in the following specification and claims.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an elevational view showing the door cutting apparatus in place upon a door frame.

FIG. 2 illustrates the apparatus overlying the door to be cut.

FIG. 3 is an enlarged detailed view of the clamp designed to hold the standard at a desired elevation relative to a hinge.

FIG. 4 is a sectional view through the standard looking downwardly at the top of the supporting clamp.

FIG. 5 is a view similar to FIG. 4 but showing the clamp in locked position.

FIG. 6 is an elevational view of the bracket designed to attach the lower hinge of the door frame.

FIG. 7 is a sectional view through the bracket shown in FIG. 6, the position of the section being indicated by the line 7-7 of FIG. 6.

FIG. 8 is an elevational view of the guide templets mounted at the lower end of the supporting standard.

FIG. 9 is an exploded view showing the manner in which a bracket is mounted on the lower end of the standard.

FIG. 10 is a sectional view through the standard looking downwardly at the templet and its supporting bracket, the position of the section being indicated by the line 10-10 of FIG. 9.

FIG. 11 is an elevational view of a hinge pin having ends of different diameters to fit in hinges having hinge pins of different diameter.

FIG. 12 is a diagrammatic view showing a standard with an extension member thereon in order to provide an initial indication of the door size so that the door may be primarily cut prior to attachment with the door frame.

DESCRIPTION OF THE PREFERRED EMBODIMENT

In the mounting of doors in door frames or the like, it is often necessary to mount the doors prior to the installation of carpeting or the like, and to then adjust the length of the door after the carpeting has been installed. This is particularly true in large apartment complexes, hotels and the like. It is undesirable to mount the doors in such a manner that there is a gap between the door sill and the door itself. On the other hand, when carpeting is installed, the door will often times be sufficiently long to rub against the carpeting during the swinging motion. It is for this reason that the present device was constructed.

As is indicated in FIGS. 1 and 2 of the drawings, the door includes a door frame which is indicated in general by the numeral 10, and a door swingable in the

frame 10 which is indicated in general by the numeral 11. In the arrangement illustrated, the door frame is provided with three fixed hinge portions 12, 13 and 14, while the door is provided with cooperable hinge portions 15, 16 and 17 respectively. In some instances the doors are supported by two, rather than three hinges.

The door 11 is mounted in the frame 10 in the usual manner by attaching the fixed hinge portions 12, 13 and 14 to the door frame, and the cooperable hinge portions 15, 16 and 17 to the door 11. In view of the fact that this is well known in the art, no further explanation is believed necessary.

In large apartment complexes and the like, as well as in private home the doors are often mounted prior to the installation of carpeting, which is one of the final operations in preparing the apartments. As a result, unless the sills such as 18 are sufficiently high, the lower edge of the door will often rub against the carpeting during the opening and closing operations of the doors. The use of high sills at the bottom of the door frames is not desirable from a safety standpoint. It might also be stated that the door frames are not always vertical so that the lower free edge of the door may tend to swing upwardly or downwardly as it is opened.

In order to provide a proper measurement for the doors, a standard 20 is provided which is usually formed of hollow rectangular aluminum tubing. An upper adjustable bracket which is indicated in general by the numeral 21 is mounted upon the standard 20, and a lower adjustable bracket 22 is supported by the standard near the lower end thereof. These brackets 21 and 22 are designed, as will be described, to cooperate with the fixed hinges 12 and 13, or 12 and 14 in the event the central hinge is omitted. When mounted upon the fixed hinge section 12 and 13, the guide template 19 may be swung about the axes of the hinges. The elevation of the template 19 is adjusted so that it just misses contact with the carpeting.

The template 19 is preferably an elongated arm of aluminum or similar material which tapers in width from the attached end to an end portion of uniform height. As indicated, the upper edge of the arm 19 may have a flange 25 attached thereto extending angularly from the upper edge so as to provide a reinforcing flange 25 attached thereto. A generally rectangular sleeve 26 encircles the standard 20 at its lower end, and is provided with generally parallel extensions on one split side, the extensions being indicated at 27. The arm or template 19 is provided with suitably spaced apertures 29 to accommodate clamping bolts 30 which are secured in place by thumb nuts 31 or the like. The bolts 30 extend through the flanges 27, the arm 19, and the arm is held in place by the tightening of the thumb nuts 31.

An arm extension 32 may be attached to the end of the arm 19 if it is so desired. The arm extension 32 includes a reversely turned flange 33 extending along its upper extremity to engage over the upper edge 34 of the end portion of the arm 19 which is of uniform height, and a reversely turned flange 35 at the lower end of the extension 32 which extends slightly beneath the lower end of the arm 19. The extension 32 is preferably frictionally engaged on the rectangular end 36 of the arm 19, and may be used where the doors are of unusual width.

The lower hinge engaging member 22 (see FIGS. 6 and 7) also comprises a sleeve which encircles the standards 20, and in the arrangement illustrated, the sleeve is formed with a split along one side to provide face contacting flanges 39 which are riveted or otherwise secured together as indicated at 40. A bracket plate 41 is riveted or otherwise secured at 42 to the side of the bracket opposite that bearing the flanges 39, and supports an angular arm 43 terminating in a sleeve or bearing 44. This sleeve 44 is designed to accommodate a hinge pin so that the standard 20 may swing relative to the fixed portions 12, 13 and 14 of the hinges. In FIG. 11 of the drawings, I disclose a hinge pin which includes an upper portion 45 of relatively large diameter which is suitable for accommodating hinges of larger size, and a lower portion 46 of somewhat smaller diameter designed to extend into hinges of perhaps 3½ inches in length or less. Optionally, the hinge pins normally used in the hinges may be used for supporting the standard 20.

As indicated in FIGS. 2 through 5 of the drawings, the upper adjustable hinge member is designed to clamp about the standard 20, and to secure the standard in a fixed relation relative to the member 21.

As shown in FIGS. 3, 4 and 5 of the drawings, the member 21 includes a generally rectangular sleeve-like body having a side 47 which is designed to overlie the side of the standard 20 closest to the hinge, slightly divergent sides 49 and 50 which extend from opposite sides of the frame side 47, right angular portions 51 and 52 which extend toward one another and are usually in right angular relation to the sides 49 and 50, and flanges 53 and 54 which are in right angular relation to the members 51 and 52 respectively. A pivot bolt or rivet 55 extends through the sides 53 and 54 to pivotally support a handle 56 which is generally U-shaped in cross-section. The handle 56 includes sides 57 and 59 connected by a connecting base portion 60. The sides 57 and 59 are considerably closer together near the free end 61 of the handle than at the hinged end thereof. Accordingly, as the handle 56 is swung in a clockwise direction as indicated in FIG. 3 of the drawings, the flanges 53 and 54 are cammed together until, in completely closed position of the handle 56, the flanges 53 and 54 are in generally parallel relation, and the bracket 21 tightly encloses the standard 20 and is held in an adjusted position.

As is indicated in FIGS. 1 and 2 of the drawings, instead of having a standard 20 of the full size and height of the door, the upper portion 62 may be in telescopic relation with the lower portion of the standard 20 as indicated in dotted outline in these figures. The only purpose of this arrangement is to facilitate the shipment and storage of the device. The two parts may be held in adjusted relation by any suitable means such as by a pin 63 extending through the upper end of the standard 20 and through any of the series of holes 64 in the extension 62.

In normal operation, the door 11 is removed from the frame 10, the freely adjustable bracket 22 is engaged with the hinge portion 12 on the door frame, and the upper adjustable bracket 21 is engaged in the hinge portion 13 on the door frame. The upper adjustable bracket is clamped to the standard 21 or to the extension 62 and the standard 20 is swung about the fixed hinge portions until the template or arm 19 swings freely over the carpet. The door 11 is placed upon saw

horses or the like, and the adjusted standard is placed upon the door with the sleeve or bearings 44 in opposed relation to the central portion of the hinge portions 15, 16 and/or 17 which are mounted upon the door 11. The door 11 is marked along the lower edge of the arm or template 19, and the door is sawed off along this line. In hinges of the type disclosed, where the fixed hinges 12, 13 and 14 include two aligned sleeves or bearings and the portions of the hinges attached to the door 11 include three aligned bearing members which dove tail with the hinge portions on the frame, the sleeves 44 on the two bracket members must be flush with the end surfaces of the center portions of the fixed hinge portions as indicated in FIG. 2.

Where the door 11 is to be cut prior to installation, the fixed portions of the hinges may be mounted upon the frame and a standard may be attached either to the upper and lower of the three hinge portions or to any two hinge sections. The standard 20 is provided with an extension 65 provided at its upper end with a right angularly extending blade 66. The extension 65 may be held in adjusted relation by a thumb screw 67 or other suitable means. In this arrangement, the standard 20 is secured to the fixed hinge portions 12, 13 or 14, the template or arm 19 being substantially at the level of the lower end of the door, and the extension 65 extending upwardly so that the end 66 engages the upper portion of the frame. This apparatus, is shown in FIG. 12 of the drawings, can then be transferred to the door with the right angularly extending portions 66 extending over the top of the door to provide the necessary slight gap between the door and the upper portion of the door frame. The device may be placed upon the door, and the door marked along the lower edge of the template or arm 19 so as to indicate the proper door length.

The apparatus shown in FIG. 12 may actually be used as a preliminary means of estimating the height of the door or the vertical length thereof by placing the end 66 over the upper edge of the door, and marking the door along the lower edge of the template or arm 19, holding the standard 20 parallel to the vertical edge of the door. Once the door has been cut, the position of the portions of the hinge which are connected to the door may be readily indicated by noting the position of the clamp 21 as compared to the fixed portions of the hinges. Once one of the hinges or hinge portions is attached to the door, the door may be hung in position, and the remaining hinge portions attached.

In accordance with the Patent Statutes, I have described the principles of construction and operation of my improvement in Method and Apparatus for cutting doors, and while I have endeavored to set forth the best embodiment thereof, I desire to have it understood that changes may be made within the scope of the following claims without departing from the spirit of my invention.

1. An apparatus used for laying out the lower edge of hinged doors including cooperable hinge portions on the door and on the door frame, the apparatus including:

a standard, a template arm mounted at the lower end of said standard, said template defining a reference line in generally right angular relation to the axis of

said standard,

a pair of brackets adjustable longitudinally along said standard having longitudinally aligned bearing means, each including an opening supported thereby,

said bearing means supporting said standard upon said hinge portions secured to said door frame by means of hinge pin members respectively extending through each of said hinge portions and the opening in the associated bearing means, said apparatus further including means for supporting and constraining said template arm for pivotal movement about an axis co-directional with the axis of said standard.

2. The structure of claim 1 and including means for securing one of said adjustable brackets in fixed relation to said standard.

3. The structure of claim 2 and in which the said one bracket is the upper bracket on said standard.

4. The structure of claim 3 and in which the lower said bracket is freely slidable along said standard.

5. The structure of claim 1 wherein said means supporting and constraining said template arm are included in said bearing means and comprise means supporting and constraining said bearing means for pivotal movement about the axis formed by said hinge pin members.

6. The structure of claim 1 and in which said hinge pins include stepped longitudinal portions of varying diameters to accommodate different hinges.

7. The structure of claim 1 and including a template arm extension adjustably supported by said template arm for extending the length of said reference line.

8. The structure of claim 1 wherein said standard includes a vertically extendable upper portion for engagement with the top of said door frame, said upper portion having a projecting member at the upper end thereof for engaging the top portion of the cooperable door.

9. The method of laying out a door hingedly connected to a door frame by vertically spaced hinges for cutting off a portion of said door in order to provide swinging clearance between the door and a carpet or the like, through the use of a standard supporting vertically adjustable brackets, and a template arm extending in substantially parallel relation to the lower end of said door frame, said brackets and standards supporting said arm for a swinging movement with respect to said spaced hinges, the method consisting of:

removing the hinge pins from said hinges and removing the door from the door frame,

attaching the standard to hinge portions on the door frame for swinging movement similar to that of the door,

adjusting the height of the template arm relative to the brackets so that the template arm will swing freely,

removing the standard from the hinge portions on the frame and placing the standard and template on the door with the brackets lined up with the hinge portions of the door, and

marking the door along the lower edge of the template arm.

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