Sept. 21, 1965 L. E. JOHNSON, JR 3,206,794

SUPPORTING MEANS FOR FOLDING DOORS

Filed June 17, 1963

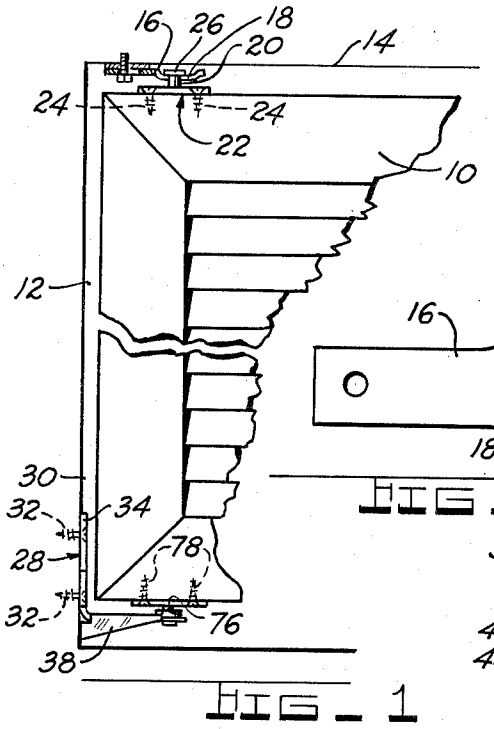


FIG. 1

FIG. 7

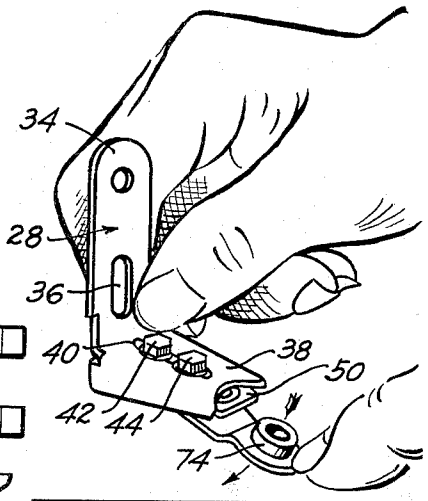


FIG. 6

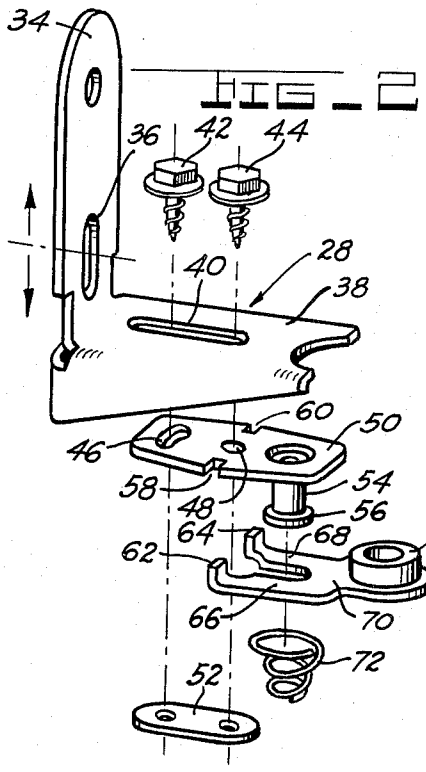


FIG. 2

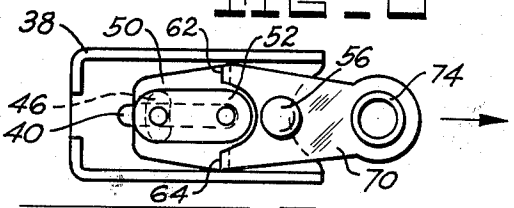


FIG. 3

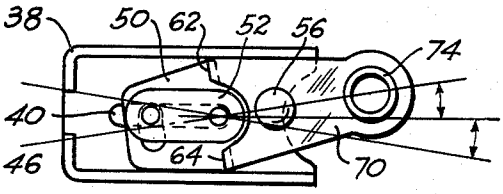


FIG. 4

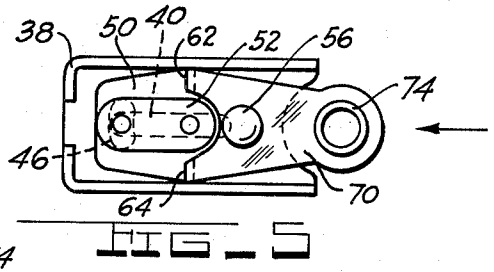


FIG. 5

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United States Patent Office 3,206,794 Patented Sept. 21, 1965

3,206,794

SUPPORTING MEANS FOR FOLDING DOORS

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Filed June 17, 1963, Ser. No. 288,256
5 Claims. (Cl. 16—151)

The present invention relates to folding doors and more particularly to means for supporting such doors in doorways.

It is conventional practice to support folding doors on a pivot pin fixed to the bottom of the door. This pivot pin is rotatably mounted in a load-carrying pivot bearing which may be mounted on the floor or on a bracket fixed to the door jamb adjacent the bottom of the door. A non-load carrying pivot pin is secured to the top of the door and is journalled in a pivot bearing secured to an overhead track or to the top of the door frame. The door is installed by inserting the top pivot pin in its bearing, raising the door sufficiently for the bottom pivot to clear its pivot bearing, and then lowering the door until the bottom pivot is disposed in a load engagement with the bottom bearing. Sufficient clearance must be left between the top of the door and the overhead track to permit the door to be raised above the bottom bearing when the door is installed or removed. The space between the top of the door and the overhead is unsightly and requires that extra trim be used to cover it.

The free end of the folding door is usually provided with a guide member or roller at the top thereof which is movable in an overhead track to guide the door and cause it to fold as the door is opened. For proper operation, the top of the doors must be parallel to and spaced a predetermined distance frm the overhead track. It is difficult to achieve this condition when the door is supported at its pivoted end from the bottom and at its free end from the top.

In the present invention both the pivoted end and free end of the folding doors are suspended from the same overhead track. Since the bottom pivot jamb bracket carries no weight it may be properly located while the door is suspended in place. After the bottom pivot jamb bracket is secured to the doorway adjacent the bottom of the door and the bottom pivot pin disposed in the bracket, further adjustment may be accomplished with the door in place. The latter adjustment may include adjustment in a direction perpendicular to the door jamb commonly called the horizontal adjustment and adjustment in a direction transverse thereto, commonly called the in and out adjustment.

It is an object of the present invention to provide means for supporting a folding door from a top pivot and providing means for disengaging the bottom pivot, so that the door may be installed or removed without substantial vertical displacement of the door.

It is a further object of the invention to provide a door jamb bracket which is universally adjustable.

These and other objects and advantages of the present invention will become readily apparent from the following detailed description taken in connection with the appended drawing in which:

FIGURE 1 is a front view of a folding door mounted in a doorway on the supporting means of the present invention;

FIGURE 2 is an exploded view of the door jamb bracket shown in FIGURE 1;

FIGURE 3 is a bottom view of the door jamb bracket showing the position of parts in the horizontal extended position;

FIGURE 4 shows the position of parts after a transverse adjustment has been made;

FIGURE 5 shows the position of parts in the horizontal retracted position;

FIGURE 6 shows the bearing arm of the door jamb bracket of FIGURE 2 depressed to its lower limit position; and

FIGURE 7 is a top view of the top pivot bracket shown in FIGURE 1.

Referring now to the drawings, **10** designates a folding door mounted in a doorway **12** having an overhead track **14** to which is secured a top pivot bracket **16** provided with an open ended slot **18** which is disposed to receive the stem **20** of a top pivot **22** which is secured at the top of door **10** by suitable screws **24**. Stem **20** of top pivot **22** is provided with an enlarged end portion **26** which is adapted to overlap slot **18**. The top pivot **22** when mounted in bracket **16** pivotally supports door **10**.

A door jamb bracket **28** is secured to the jamb or side **30** of doorway **12** by suitable screws **32**. The vertical mounting plate **34** of bracket **28** is provided with a vertical slot **36** through which one of the screws **32** is adapted to extend and provides means for readily adjusting the jamb bracket vertically. A horizontally extending flange **38** is formed on jamb bracket **28**. A longitudinal slot **40** is formed in flange **38** to receive screws **42** and **44** which are adapted to respectively extend through arcuate opening **46** and circular opening **48** formed in a plate **50**. Screws **42** and **44** are received in fastener member **52** to clampingly secure plate **50** to flange **38**. A stem **54** depends from plate **50** and is provided with an enlarged head or end portion **56**. Plate **50** is also provided with a pair of diametrically opposed recesses **58** and **60** which are adapted to respectively receive the turned over end portions **62** and **64** of spaced fingers **66** and **68** formed on horizontally extending arm **70**. The spaced fingers **66** and **68** are disposed to straddle or receive stem **54**. A resilient means or spring **72** encircles stem **54** and abutts the enlarged head **56** at one end and arm **70** at the other end to resiliently urge arm **70** towards its upper predetermined limit position where it is substantially parallel to plate **50** and flange **38**. As best seen in FIGURE 6, arm **70** is pivotally mounted with respect to plate **50** and flange **38** and is movable downwardly into a lower limit position. A nylon annular bearing member **74** is formed on arm **70** and is adapted to journal a bottom pivot pin **76** when the arm is in its upper limit position as shown in FIGURE 1. The bottom pivot pin **76** is secured to the bottom of door **10** by suitable screws **78**. When the arm **70** is depressed to its lower limit position as shown in FIGURE 5 the bearing is positioned below the end pivot pin **76** so as to be out of engagement therewith.

The screws **42** and **44** may be loosened to permit the plate **50** and arm **70** to be moved back and forth in a horizontal direction perpendicular to the door jamb **30**. The parts are shown in their extreme extended position in FIGURE 3 and in the extreme retracted position in FIGURE 5.

With screws **42** and **44** loosened the plate **50** and arm **70** may be moved in a transverse in or out direction within the limits of the arcuate slot **46**. The position of parts shown in FIGURE 4 illustrates the extreme "in" adjustment.

From the above description, it will be readily apparent that the door may be easily suspended from the top pivot bracket and secured for proper operation by the door jamb bracket.

I claim:

1. Supporting means for pivotally mounting a folding door in a doorway comprising:

a bracket adapted to be secured to the top of said

doorway, there being an open ended slot formed in said bracket,
a pivot having a stem portion adapted for insertion in said slot and also having an enlarged end portion adapted to overlap said slot,
means for securing said pivot to the top of the door, said pivot suspending said door from said bracket when the end portion of said pivot is in position to overlap said slot,
a jamb bracket adapted to be secured to a side of the doorway adjacent the bottom of the door,
a horizontally extending arm pivotally mounted on said jamb bracket for movement in a vertical plane between upper and lower predetermined limits,
a pivot pin,
means for securing said pivot pin to the bottom of said door,
an annular bearing mounted on said arm for receiving said pivot pin when said arm is in its upper limit position, and
resilient means urging said arm towards its upper limit position, said arm being movable to its lower limit position wherein said bearing is disposed below the end of said pivot pin.

2. Supporting means for pivotally mounting a folding door in a doorway comprising:
a bracket adapted to be secured to the top of said doorway,
there being an open ended slot formed in said bracket,
a pivot having a stem portion adapted for insertion in said slot and also having an enlarged end portion adapted to overlap said slot,
means for securing said pivot to the top of the door, said pivot suspending said door from said bracket when the end portion of said pivot is in position to overlap said slot,
a jamb bracket having a horizontally extending flange formed thereon,
means for securing said jamb bracket to a side of the doorway adjacent the bottom of the door,
a plate axially adjustably secured to said flange,
a stem having an enlarged head depending from said plate,
a horizontally extending arm pivotally mounted on said plate,
there being a slot in said arm adapted to receive said stem,
resilient means encircling said stem and urging said arm toward an upper limit wherein said arm is substantially parallel to said plate,
a pivot pin secured to the bottom of the door, and
a bearing formed in said arm to journal said pivot pin when said arm is in its upper limit position, said arm being pivotable downward into a lower limit position wherein said arm is in engagement with the head of said stem and said bearing is out of engagement with said pivot pin.

3. Supporting means for pivotally mounting a folding door in a doorway comprising:
a bracket adapted to be secured to the top of said doorway,
there being an open ended slot formed in said bracket,
a pivot having a stem portion adapted for insertion in said slot and also having an enlarged end portion adapted to overlap said slot,
means for securing said pivot to the top of the door, said pivot suspending said door from said bracket when the end portion of said pivot is in position to overlap said slot,
a jamb bracket having a horizontally extending flange formed thereon,
a means for vertically adjustably securing said jamb bracket to a side of the doorway adjacent the bottom of the door,

there being a longitudinal slot formed in said flange,
a plate having spaced longitudinal openings one of which is arcuate shaped,
a pair of securing means extending through said longitudinal slot and said openings to secure said plate to said flange whereby said plate is transversely and axially adjustable with respect to said flange,
a stem having an enlarged head depending from said plate,
a horizontally extending arm pivotally mounted on said plate,
there being a slot formed in said arm to receive said stem,
resilient means abutting the head of said stem and said arm for urging said arm toward an upper limit position wherein said arm is substantially parallel to said plate,
a pivot pin secured to the bottom of the door, and
a bearing formed in said arm to journal said pivot pin when said arm is in its upper limit position, said arm being pivotable downwardly into a lower limit position wherein said bearing is out of engagement with said pivot pin.

4. A jamb bracket having a horizontally extending member for journalling the bottom pivot of a folding door comprising:
there being a longitudinal slot formed in said member,
a plate having a pair of spaced longitudinal openings one of which is arcuate shaped,
a pair of securing means extending through said longitudinal slot and said openings to secure said plate to said member whereby said plate is transversely and axially adjustable with respect to said member,
a stem having an enlarged head depending from said plate,
there being a pair of spaced recesses formed in said plate,
an arm formed with a pair of spaced fingers having turned over end portions adapted to be received in said recess,
resilient means disposed between the head of said stem and said arm for urging said arm toward an upper limit position wherein said arm is substantially parallel to said plate, and
a bearing formed in said arm and adapted to journal said pivot when said arm is in its upper limit position; said arm being pivotable downwardly into a lower limit position to render said bearing ineffective as a journal for said pivot.

5. Supporting means for pivotally mounting a folding door in a doorway comprising:
means for suspending said door from the top,
a pivot mounted on the bottom of said door,
a jamb bracket having a horizontally extending member,
arm means pivotally mounted on said member for movement between upper and lower limit positions, and
a bearing formed on said arm means and adapted to journal said pivot when the arm means is in its upper limit position and to be ineffective as a journal when the arm is in its lower limit position.

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